

**RETHINKING REMEDIATION:  
MINE CLOSURE AND COMMUNITY ENGAGEMENT AT THE GIANT MINE,  
YELLOWKNIFE, NORTHWEST TERRITORIES, CANADA**

by © Caitlynn Beckett A Thesis submitted  
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## **ABSTRACT**

Mine remediation entails long-term risks due to the need to contain and monitor dangerous materials. To date, research on mine remediation in Canada has focused primarily on technical fixes; little is known about the political and social nature of remediation. Using the Giant Mine in Yellowknife, NWT as a case study, this thesis analyzes mine remediation in the Canadian sub-Arctic and investigates how local communities shape remediation processes. Applying the concepts of ecological restoration, environmental justice, social waste theory, and theories of repair, and care, this thesis analyzes how effectively community concerns have been included in remediation planning. This thesis asks: how can the current approach to mine remediation be changed from a focus on site containment to a broader emphasis on community remediation, restoration, and reconciliation? Without a community objectives based approach to remediation, such projects risk continuing systems of colonization, marginalization and environmental degradation.

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## **List of Acronyms**

Contaminants and Remediation Directorate (CARD)

Department of Indian Affairs and Northern Development (DIAND)

Federal Contaminated Sites Action Plan (FCSAP)

Giant Mine Advisory Council (GMAC)

Giant Mine Oversight Body (GMOB)

Giant Mine Remediation Project (GMRP)

Giant Mine Remediation Project Team (GMRPT)

Giant Mine Working Group (GMWG)

Government of the Northwest Territories (GNWT)

Independent Peer Review Panel

Indian and Northern Affairs Canada (INAC)

Indigenous and Northern Affairs Canada (INAC)

Mackenzie Valley Land and Water Board (MVLWB)

Mackenzie Valley Environmental Impact Review Board (MVEIRB)

Northwest Territories (NWT)

Report of Environmental Assessment (REA)

Yellowknife Arsenic Soils Remediation Committee (YASRC)

Yellowknives Dene First Nations (YKDFN)

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# CHAPTER 1

## INTRODUCTION: THE GIANT MINE MONSTER

### Introduction

Beyond the danger signs that dot the perimeter of the Giant Mine lease boundary just outside of Yellowknife, Northwest Territories, there are few visual warnings of the toxic arsenic trioxide waste stored underground, the byproduct of nearly 50 years of gold mining at the site. Outside of the mine lease area, unmarked patches of contaminated soils and sediments are spread across the nearby landscape and waterways. Those who have lived off this land are keenly aware of these invisible threats.<sup>1</sup> While many locals hoped that remediation of this abandoned mine would entail the removal or neutralization of this arsenic trioxide waste, they have been forced to accept that this underground threat could be there forever, returning to haunt them unless some other technology is developed.<sup>2</sup> For the past decade, the federal and territorial governments, as well as the local community, have grappled with the question of how to remediate these toxic legacies. The story of remediation at Giant Mine is about more than just containing and managing contamination. It is also a story of environmental (in)justice, community perseverance, intergenerational equity and hope in the face of incredible destruction.

Operating from 1948 until 2004, the Giant Mine produced over seven million

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<sup>1</sup> Yellowknives Dene First Nation Land and Environment Committee, *Impact of the Yellowknife Giant Gold Mine on the Yellowknives Dene: A Traditional Knowledge Report*, Prepared for the Department of Indian and Northern Affairs Giant Mine Remediation Project Office, Yellowknife NWT, (October 13, 2005).

<sup>2</sup> John Sandlos and Arn Keeling, "Toxic Legacies, Slow Violence and Environmental Injustice at Giant Mine, Northwest Territories," *The Northern Review* 42 (2016): 7-21; Arn Keeling and John Sandlos, "Ghost Towns and Zombie Mines: The Historical Dimensions of Mine Abandonment, Reclamation, and Redevelopment in the Canadian North," in *Ice Blink: Navigating Northern Environmental History*, ed. Stephen Bocking and Brad Martin (Calgary: University of Calgary Press, 2017).

ounces of gold, with a waste production of over 237 000 tonnes of toxic arsenic trioxide dust, some of which is now stored in 14 underground chambers.<sup>3</sup> For the first three years of operation pollution controls were non-existent, resulting in the distribution of arsenic trioxide throughout the surrounding communities, forests and water systems.<sup>4</sup> In 1951, several months after the death of a Dene child due to acute arsenic poisoning, pollution controls were put in place to capture the arsenic trioxide waste and store it underground. However, for many years to come, some arsenic trioxide continued to escape into the surrounding environment. The Yellowknives Dene community of N'dilo was at a far greater risk of health effects from pollution due to its proximity to the mine and their reliance on polluted snow or lake water (Fig. 1).<sup>5</sup> Attempts to warn the Dene community about arsenic contamination were inconsistent and often only expressed in English.<sup>6</sup> For the Yellowknives Dene, mining and arsenic pollution was central to their experience of colonialism.<sup>7</sup>

When the Giant Mine went bankrupt in 1999, the mine owner of the time, Royal Oak, left the federal and territorial governments with an extensive legacy of mine

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<sup>3</sup> John Sandlos and Arn Keeling, *Giant Mine: Historical Summary* (St. John's, NL: Memorial University, 2012), [http://www.reviewboard.ca/upload/project\\_document/ea0809-001\\_giant\\_mine\\_history\\_summary.pdf](http://www.reviewboard.ca/upload/project_document/ea0809-001_giant_mine_history_summary.pdf).

<sup>4</sup> Adam Houben, Rebecca D'Onofrio, Steven Kokelj and Jules M. Blais, "Factors Affecting Elevated Arsenic and Methyl Mercury Concentrations in Small Shield Lakes Surrounding Gold Mines near the Yellowknife, NT, (Canada) Region," *PLOS One* 11 (2016): e0150960.

<sup>5</sup> YKDFN, *Impact of the Yellowknife Giant Gold Mine on the Yellowknives Dene: A Traditional Knowledge Report*.

<sup>6</sup> Fred Sangris (Employee of the YKDFN Land and Environment Department), in interview with author, June 2016; John Sandlos and Arn Keeling, *Giant Mine: Historical Summary*. According to Sandlos and Keeling, a study produced in the 1970s by the National Indian Brotherhood stated that warning signs about arsenic contamination were not posted in local First Nations languages until 1974. See Lloyd Tateryn, "Arsenic and Red Tape," National Indian Brotherhood, University of Alberta Library (1979).

<sup>7</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*; John Sandlos and Arn Keeling, "Aboriginal communities, traditional knowledge, and the environmental legacies of extractive development in Canada," *The Extractive Industries and Society* 3, no. 2 (2016): 278-287.

pollution. Yellowknife citizens were affected both by the loss of economic opportunities and the uncertainty of how the arsenic pollution would be managed far into the future. The YKDFN, along with other community stakeholders, were marginalized from the processes of remediation planning. In the early 2000s, community stakeholders were divided and uncertain, and were not directly involved in setting objectives for remediation and arsenic management. Some saw the gold, wealth and community created, while others saw the waste and environmental destruction. Many sat uncomfortably in-between.

In 2007 a remediation plan was published by the Giant Mine Remediation Project Team (GMRPT) that featured the ‘frozen block method’ as the best option for arsenic remediation at the Giant Mine.<sup>8</sup> This method uses thermosyphon technology to freeze the ground around the arsenic chambers, essentially sealing these areas off from the environment around them.<sup>9</sup> This plan required that the site be monitored and maintained in perpetuity. Many community members were unsatisfied with this remediation plan and the Yellowknives Dene and Alternatives North, a social justice NGO in the NWT, petitioned the City of Yellowknife to request an environmental assessment of the remediation plan from the Mackenzie Valley Environmental Impact Assessment Board.<sup>10</sup> The environmental assessment, completed in 2013, led to the signing of the Giant Mine Remediation Project Environmental Agreement in June 2015.<sup>11</sup> This agreement is a

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<sup>8</sup> Indian and Northern Affairs Canada, *Giant Mine Remediation Plan*, prepared by SRK Consulting and SENES Consultants Limited (2007).

<sup>9</sup> Indian and Northern Affairs Canada, *Final Report: Arsenic Trioxide Management Alternatives*, prepared by SRK Consulting, SENES Consultants Limited, HGE and Lakefield Research (2002).

<sup>10</sup> Office of the Mayor, Yellowknife, “Letter of Referral of Environmental Assessment from the City of Yellowknife,” (MVERIB Registry, Mar. 31, 2008).

<sup>11</sup> Mackenzie Valley Environmental Impact Review Board (MVEIRB), *Report of Environmental Assessment and Reasons for Decision: Giant Mine Remediation Project* (MVEIRB Registry, 2013).

legally binding document that holds the Project Team, consisting of the federal and territorial governments, responsible to ensure community involvement and consent in future remediation planning.

## **Research Objectives and Questions**

Several times throughout meetings and interviews, the Giant Mine was referred to as an ‘underground monster.’ The first recorded use of this term was by Mary Rose Sundberg in the film *Guardians of Eternity*. She was discussing the use of a story of the ‘Giant Mine Monster’ as a way to communicate the lessons of the Giant Mine to future generations.<sup>12</sup> And while it is not a part of the Yellowknives Dene First Nation’s (YKDFN’s) traditional knowledge, the term has become a useful metaphor in discussing the YKDFN’s relationship with the Giant Mine, and how the site will be cared for in the future. I have borrowed this narrative tool as a way of framing the story of remediation at Giant Mine.<sup>13</sup> Therefore, this research investigates the story of the creation of the Giant Mine Monster, how it was defined, how it has changed, and how the community will care for the Monster in the future.

This research investigates why community stakeholders rejected the 2007 remediation plan, despite government arguments that the remediation plan did not present any cause for concern. I then analyze how community stakeholders redefined remediation

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Mackenzie Valley Land and Water Board; *Giant Mine Remediation Project Environmental Agreement*, (June 9, 2015).

<sup>12</sup> *Guardians of Eternity*, directed by France Benoit (Yellowknife: Sheba Films, 2015).

<sup>13</sup> Since the “Giant Mine Monster” term is not a part of YKDFN traditional knowledge, but rather is used as a narrative tool to present the YKDFN’s position on Giant Mine, both William Lines, the YKDFN Giant Mine Liaison and Johanne Black, the YKDFN Director the Land and Environment Department agreed that it would be appropriate for me to use this metaphor in my research.

planning at the Giant Mine through the Environmental Assessment and Environmental Agreement processes. Analysis of the Giant Mine Remediation Project from 1999 to present is organized into two analytical chapters (Chapter 4 and 5). The research questions for both of these sections are complementary. First, I focus on analyzing the literature, documents, reports and public hearings specific to the Giant Mine Remediation Project and the broader context of remediation in the NWT and Canada. This section asks:

- *How has remediation at the Giant Mine progressed since 1999? Why did the community reject the Final Remediation Plan in 2007?*
- *How does the Giant Mine relate to broader questions of mining impacts and remediation practices in Canada?*

Through the process of Environmental Assessment, community stakeholders pushed the government project to *confront* the Giant Mine Monster in a more holistic sense.

Therefore, Chapter 5: Confronting and Caring for the Giant Mine Monster is based on interviews and participant observation and focuses on the different perspectives on remediation. This section asks:

- *How do different groups envision the concept of remediation and what does it mean to them? What do they think about the Giant Mine remediation process today: Is it working, why or why not?*
- *How has remediation changed since the Environmental Assessment?*

Going forward, remediation at the Giant Mine has now become a question of long-term management, stewardship and perpetual care. Therefore, Chapter 5 also asks:

- *How can the current approach to mine remediation be changed from a focus on site contamination to a broader emphasis on community remediation and reconciliation? Should the focus be changed at all?*

The Giant Mine makes for an interesting case study of community engagement in mine remediation because it is the only known mine in Canada to date where an environmental assessment and agreement have been carried out for the remediation process, at the communities' request. This research explores the multiple experiences, practices and stories of remediation from Indigenous people, government representatives, scientists, consultants, NGOs and other community members, while being sensitive to the importance of the narratives and values of traditional knowledge systems.<sup>14</sup> From this platform, I analyze how effectively remediation processes at the Giant Mine have included local knowledge and community concerns in remediation planning and how the inclusion of such knowledge has shaped the remediation process. This is critical for understanding the broader issues of remediation, resource development and environmental justice across northern Canada.<sup>15</sup>

## **Study Area**

The Giant Mine is located 5 kilometers north of Yellowknife, the capital city of the Northwest Territories (Fig. 1). Geographically, the Giant Mine is on shores of Great Slave Lake, one of the largest freshwater lakes in the world, and can be seen across Back

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<sup>14</sup> Stephen Ellis, "Meaningful Consideration? A Review of Traditional Knowledge in Environmental Decision Making," *Arctic* 58, no. 1 (2005): 66-77.

<sup>15</sup> Sandlos and Keeling, "Aboriginal communities, traditional knowledge, and the environmental legacies of extractive development in Canada."

Bay from the Yellowknives Dene community of N'dilo. The City of Yellowknife was built on mining - as local street signs say, 'Yellowknife, where the gold is paved with streets.' Serious prospecting in the area began in the 1930s, and major development followed after the Second World War. In 1935, Johnny Baker discovered gold at the current day Giant Mine site. The population of Yellowknife grew from a few hundred in the 1930s to over 3000 by the 60s, many of whom came for jobs at the Con and Giant Mines. Until the 1990s gold mining was the main driver of the Yellowknife economy, which has since transitioned to diamond mining and services. Today, about 20 000 people live in Yellowknife.<sup>16</sup>

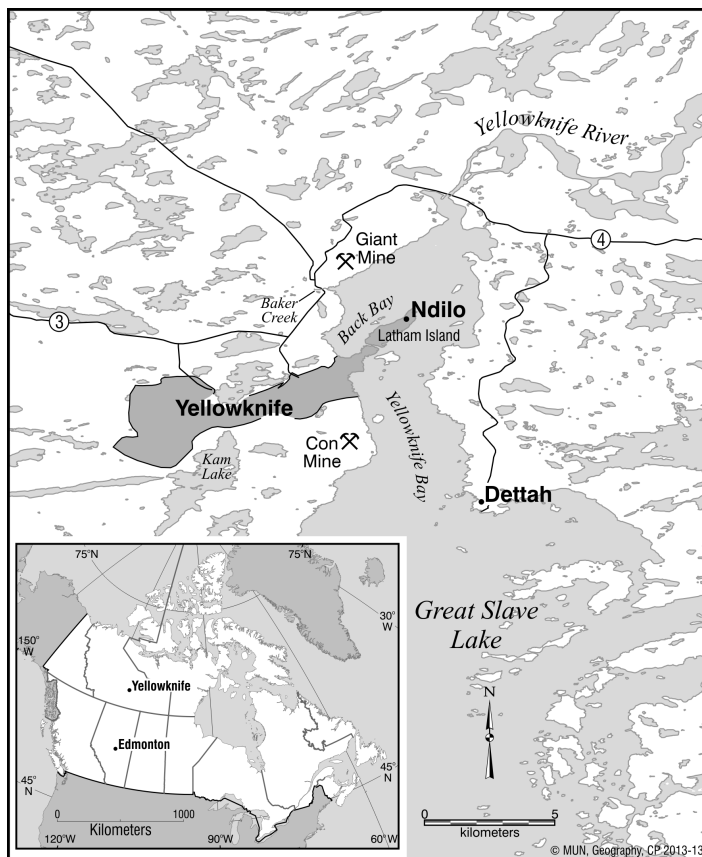


Fig. 1 Map of the Yellowknife area (credit: Charlie Conway)

<sup>16</sup> O'Reilly, Kevin. "Liability, legacy, and perpetual care: Government ownership and management of the Giant mine, 1999-2015," in *Mining and Communities in Northern Canada: History, Politics and Memory*, ed. Arn Keeling and John Sandlos, (Calgary, Alberta: University of Calgary Press, 2015).

The Yellowknives Dene and their ancestors have lived in the area for more than 7000 years. The Yellowknives Dene signed Treaty 8 in 1900 in Fort Resolution; however, their traditional lands were not originally recognized.<sup>17</sup> In 1920s, Liza Crookedhand, a member of the YKDFN, found gold near the Yellowknife River (Weledeh), which she later traded to a prospector. At this point, Treaty rights were not honoured, and the YKDFN lost control over their land, as mining development spread and the community of Yellowknife was established.<sup>18</sup> Permanent settlements at N'dilo and Dettah were established alongside the development of Yellowknife and were greatly affected by their proximity to mining developments.<sup>19</sup> Negotiations for the Dene/Metis Comprehensive Land Claim did not begin until 1984. In 1991, the Yellowknives Dene, as a part of the Akaitcho Dene First Nations, decided to continue with Treaty Implementation instead of pursuing a comprehensive land claim. As a part of the Akaitcho Territory government the Yellowknives Dene are still negotiating land claims, a process that has been long, complicated and full of controversy.<sup>20</sup> This continuing uncertainty surrounding control

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<sup>17</sup> Rene Fumoleau, *As Long As This Land Shall Last: a history of Treaty 8 and Treaty 11, 1870-1939*. (Toronto: McClelland and Stewart, 1974). The original Treaty 8 map does not include the Yellowknife/Akaticcho Territory, even though Chief Drygeese of the Yellowknives did sign the Treaty. In 1923 the Yellowknife Game Preserve was established, which was set-aside for Dene hunting and trapping. Although it is unclear how this has carried through to today. Yellowknife was established and mines were developed despite this Yellowknife Game Preserve. In the YKDFN, *The Giant Mine: Our Story, The Impact of the Yellowknife Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report* it is suggested that because Chief Drygeese spoke the language of the Tlicho and southern Chipewyan, that it was assumed by priests and government officials that they were the same. Later, Randy Freeman says that there are maps that show an extension of the Treaty to include Yellowknife/Akaticcho Territory, but the Treaty has not recognized this.

<sup>18</sup> YKDFN, *The Giant Mine: Our Story, The Impact of the Yellowknife Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*. Prepared by the Yellowknives Dene First Nation Land and Environment Committee. Prepared for the Department of Indian and Northern Affairs, Giant Mine Remediation Project office, Yellowknife, NWT, October 13, 2005.

<sup>19</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*.

<sup>20</sup> A framework agreement for land claims was signed in 2000 and the commissioners land withdrawal was announced in 2006, however the land claims and treaty implementation process has yet to be completed. For a list of relevant documents and agreements see The GNWT's "Concluding and Implementing Land



over land and resources only serves to deepen sentiments of marginalization and mistrust. The Yellowknives Dene First Nation has been continuously exposed to elevated levels of arsenic for more than 50 years.<sup>21</sup> According to Sandlos and Keeling, “The historical geography of arsenic contamination in the Yellowknife region reveals the unequal ‘pathways of exposure’ of the Yellowknives Dene people to arsenic.”<sup>22</sup> The YKDFN community relied on contaminated local land and water sources for their subsistence. Arsenic contamination resulted not only in sickness and death within the YKDFN community, but lead to a “profound alienation from a landscape that had, in effect, been colonized as a pollution sink for southern economic interests.”<sup>23</sup> Memories of the arsenic continue to be widely discussed in the communities of Dettah and N’dilo, “forming the core narrative of the Yellowknives’ encounter with the gold mines.”<sup>24</sup>

## Conceptual Framework

In order to address these research questions, this thesis begins by questioning what mine remediation is and how it has traditionally been defined. To date, research on mine remediation in Canada has focused primarily on its scientific and economic aspects; little is known about the political, social and environmental dimensions of remediation in the

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Claim and Self Government Agreements: Akaitcho Dene First Nation,” <https://www.eia.gov.nt.ca/en/priorities/concluding-and-implementing-land-claim-and-self-government-agreements/akaitcho-dene-first>.

<sup>21</sup> YKDFN, *The Giant Mine: Our Story*.

<sup>22</sup> John Sandlos and Arn Keeling, “Toxic Legacies, Slow Violence, and Environmental Injustice at Giant Mine, Northwest Territories,” *The Northern Review* 42 (2016), 8

<sup>23</sup> Ibid.

<sup>24</sup> Sandlos & Keeling, *Giant Mine: Historical Summary*.

Canadian north.<sup>25</sup> Current federal, territorial, and regional policies addressing remediation are fragmented and incomplete.<sup>26</sup> There are no requirements for community or Indigenous involvement in remediation planning and there are limited financial supports for any groups that want to be involved in decision-making processes.<sup>27</sup> In other words, the current policy framework does not support meaningful, self-determined community involvement in remediation processes. Remediation requires more than just a technological fix or strategy in order to ensure that colonial, environmentally destructive systems of development do not persist throughout remediation processes.

The Giant Mine has a long history of pollution and environmental injustice; remediation at Giant is not an apolitical or ahistorical process. Today, the Giant Mine Remediation Project has the potential to continue to impact surrounding communities for generations to come. As Anne Dance argues, a discussion of goals and a thorough reflection of remediation projects in the past and present are required to inform current processes.<sup>28</sup> With numerous abandoned mines across the North, as well as an increasing number of new resource developments, the Giant Mine Remediation Project presents an important opportunity to analyze and assess closure and remediation practices at the

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<sup>25</sup> Ken Coates, *History and Historiography of Natural Resource Development in the Arctic* (2013); Ken Coates, W. Lackenbauer, B. Morrison, & Greg Poelzer, *Arctic Front: Defending Canada in the Far North*, (Toronto: Thomas Allen Publishers, 2008); Arn Keeling, John Sandlos, John Sebastien Boutet and Hereward Longley, *Managing Development? Knowledge, Sustainability and the Environmental Legacies of Resource Development in Northern Canada* (Resources and Sustainable Development in the Arctic, 2013), Gap Analysis Report #12 <http://yukonresearch.yukoncollege.yk.ca/wpmu/wp-content/uploads/sites/2/2013/09/12-Keeling-et-al2.pdf>

<sup>26</sup> M. Wenig, Kevin O'Reilly, & D. Chambers, *The Mining Reclamation Regime in the Northwest Territories: A Comparison with Selected Canada and U.S. Jurisdictions* (Canadian Institute of Resources Law and Canadian Arctic Resources Committee, 2005).

<sup>27</sup> Diana Valiela & Christopher Baldwin, "Dealing with Mining Legacy – Some Canadian Approaches," *Lawson Lundell LLP* (2007); and Carly Dokis, *Where the Rivers Meet: Pipelines, Participatory Resource Management and Aboriginal-State Relations in the North West Territories* (Vancouver: UBC Press, 2015).

<sup>28</sup> Anne Dance, "Northern Reclamation in Canada: Contemporary Policy and Practice for New and Legacy Mines." *The Northern Review* 41 (2015): 41-80.

social and political levels in order to improve the planning process and ensure environmental justice for local communities.<sup>29</sup>

Recognizing the gap in socially focused literature on remediation and the fragmentation of policy regarding remediation, this thesis investigates the socio-political context of remediation at the Giant Mine through the critical theoretical lenses of ecological restoration, environmental justice, discard studies and ‘matters of care’.<sup>30</sup> In this sense, my conceptual framework goes beyond containment and management approaches to remediation in order to investigate broader issues of morals, values, justice, care and reconciliation alongside remediation at the Giant Mine.

In regards to the Giant Mine, community stakeholders have every different perceptions of what remediation should mean, and it is therefore important to discuss definitions of remediation. Various ‘levels’ of remediation can bring about distinctly different end land uses and costs. Words such as *restoration* or *rehabilitation* imply some kind of return of value to the land that was degraded. Remediation can also be considered a type of *mediation*, including the remaking or repairing of relationships between people and the land that they use.

Focusing on the social implications of mine remediation and how community stakeholders perceive remediation differently, I combine environmental justice and discard studies with a “matters of care” approach in order to question how mine remediation and the long-term care of contaminated sites are perceived, valued and

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<sup>29</sup> Arn Keeling and John Sandlos, “Environmental Justice Goes Underground? Historical Notes from Canada’s Northern Mining Frontier,” *Environmental Justice* 2, no. 3 (2009): 117-125; National Orphaned and Abandoned Mines Initiative (NOAMI), *Lessons Learned: On Community Involvement in the Remediation of Orphaned and Abandoned Mines* (2003).

<sup>30</sup> Refer to Chapter 2 Literature Review: Rethinking Remediation for citations on these theoretical lenses.

planned for in different ways by different groups of people. Framing discussions on toxic mine waste and remediation within an environmental justice (EJ) framework brings the community to the center of the discussion.<sup>31</sup> However, mine waste is dynamic, it can change and flow over time and presents problems of cumulative impacts across multiple geographies and over long periods of time.<sup>32</sup> Discard studies, in addition to an perspective, situates mine waste as something both material and social and argues that we must confront both the materialities of the waste we have produced and the colonial, gendered, racialized systems in which they are produced.<sup>33</sup> The Giant Mine Remediation Project is a political, messy, dynamic process that involves humans, mine waste and the environment. A “matter of care” approach recognizes the Giant Mine Monster as something that must be cared for, including the relationships between humans, waste and environment that are shaped by this toxic space.<sup>34</sup> In this sense, remediation can be framed as a long-term ‘stewardship’ or ‘care’ plan for the Giant Mine Monster and can be approached within broader frameworks of reconciliation and environmental justice.

At the Giant Mine, initial remediation plans did not ‘care’ for or consider the relationships created through mining. The YKDFN and other community stakeholders did not have the opportunity to participate fully and were denied environmental justice for

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<sup>31</sup> Richard Howitt, *Rethinking Resource Management: Justice, Sustainability and Indigenous Peoples* (London: Routledge, 2001); Joan Martinez-Alier, “Mining conflicts, environmental justice, and valuation,” *Journal of Hazardous Materials* 86, no.1-3 (2001): 153–170; David Pellow, “Environmental Inequality Formation: Toward a Theory of Environmental Justice,” *American Behavioral Scientist* 43, no. 4 (2000): 581-601.

<sup>32</sup> Joshua Reno, “Waste and Waste Management,” *Annual Review of Anthropology* 44 (2015): 557–721; Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, Mass: Harvard University Press, 2011).

<sup>33</sup> Lindsey Dillon, “Race, Waste, and Space: Brownfield Redevelopment and Environmental Justice at the Hunters Point Shipyard,” *Antipode* 46, no. 5 (2014): 1205–21; Traci Brynne Voyles, *Wastelanding: Legacies of Uranium Mining in Navajo Country* (Minneapolis: University of Minnesota Press, 2015).

<sup>34</sup> Sebastian Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine,” *Environment and Planning A* 48, no. 8 (2016): 1532–48.

past contamination. Also, community stakeholders were not involved in defining what mining waste was, what the geographies of waste were, or what remediation and perpetual care of mine wastes might mean for future generations. However, by forcing the Giant Mine Remediation Project through an Environmental Assessment, community stakeholders attempted to redefine remediation alongside community-based values. With the development of the Environmental Agreement, the direct involvement of multiple stakeholders and the Giant Mine Oversight Board, there are now structures being put in place that can make space for environmental justice and planning for long-term process of care.

## **Methods and Methodology**

Using a case study research methodology, this project adopts a mixed-methods approach that combines archival study, literature reviews, key informant interviews, and participant observation aimed at recovering and analyzing the multiple experiences, practices and stories of mine remediation from Indigenous people, government representatives, scientists and other community members while being sensitive to the importance of traditional knowledge systems.<sup>35</sup> According to Gerring, a case study is “an intensive study of a single unit for the purpose of understanding a larger class of similar units.”<sup>36</sup> Baxter builds on this definition stating that a case study involves the study a single instance or a small number of instances of a phenomenon in order to explore in-

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<sup>35</sup> Julie Cruikshank, *Do Glaciers Listen?: Local Knowledge, Colonial Encounters and Social Imagination*, (Vancouver: UBC Press, 2005).

<sup>36</sup> J. Gerring, “What is a case study and what is it good for?” *American Political Science Review* 98, no. 2 (2004): p. 342.

depth nuances.<sup>37</sup> Such an approach works well for analyzing the specific processes of remediation at Giant Mine, while taking into account the broader narratives of mining and resource development in Northern Canada.

Building on my supervisors' existing research relationships through the "Toxic Legacies" and "Northern Exposures" projects, I worked directly with the Yellowknives Dene First Nation and Alternatives North in planning and conducting my research. This helped to ensure local research authorization and ensured that cultural protocols were honoured, especially in regard to the sharing and use of local knowledge. To clarify, this research is not a Traditional Knowledge study,<sup>38</sup> but rather, focuses on community and Traditional Knowledge integration in the remediation plan. In order to build a general context of remediation at the Giant Mine, I began my research with an investigation of online public registries such as the Mackenzie Valley Land and Water Board Registry, the NWT's Archives and documents in the Federal Contaminates Sites Portal. Document and policy analysis provided background for interviews and participant observation.

## **Interview Methods**

Semi-structured, key informant interviews engaged people with specific knowledge on the remediation process including government officials, environmental and social justice NGOs, industry, consultants, scientists, Indigenous leaders, and community participants (Appendix I). According to Shopes, "Including a range of narrators

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<sup>37</sup> Jamie Baxter, "Case Studies in Qualitative Research," in *Qualitative Research Methods in Human Geography: 3<sup>rd</sup> Edition*, ed. Iain Hay (Don Mills, Ontario: Oxford University Press, 2010), 81.

<sup>38</sup> See an overview of Traditional Knowledge studies on mining and environmental decision making in the NWT, see: Stephen Ellis, "Meaningful Consideration? A Review of Traditional Knowledge in Environmental Decision Making," *Arctic* 58, no. 1(2005): 66-77.

simultaneously deepens the inquiry and extends it outward, helping us understand both the internal complexity of the community under study and its relationship to a broader historical process.”<sup>39</sup> These diverse, semi-structured interviews were organized around ordered, but flexible and open-ended questions outlined in an interview guide.<sup>40</sup> According to Dunn, a mix of carefully worded questions, topic areas, key words and concepts in interview guides provides both predetermined questions and prompts that allow for a guided, but still flexible interview.<sup>41</sup> Such a guide or checklist assists the interviewer to direct the conversation, ensuring that the researcher meets their objectives, that there is equivalence across interviews and that interviewees are allowed to raise their own issues for discussion and potential inclusion in the researcher’s continually modified interview framework.<sup>42</sup> According to Crang and Cook, “the researcher and researched together *construct* intersubjective understandings.”<sup>43</sup> Along the same lines, Shopes suggests framing the interview as a mutual exploration of the issue being discussed.<sup>44</sup> Open-ended questions lead to more discursive answers and allowed the interviewee to define the conversation and introduce different lines of inquiry. For this research, open-ended questions were more likely to allow for deeper discussion about the remediation process than a survey or structured interview would allow. Specific questions within the interviews changed depending on the interviewee’s position and experience. The

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<sup>39</sup> Linda Shopes, “Oral History and the Study of Communities: Problems, Paradoxes, and Possibilities,” *The Journal of American History* 89, no.2 (2002): 597.

<sup>40</sup> Iain Hay, *Qualitative Research Methods in Human Geography: 3<sup>rd</sup> Edition* (Don Mills, Ontario: Oxford University Press, 2010).

<sup>41</sup> Kevin Dunn, “Interviewing,” in *Qualitative Research Methods in Human Geography: 3<sup>rd</sup> Edition*, ed. Iain Hay, (Don Mills, Ontario: Oxford University Press, 2010).

<sup>42</sup> Mike Crang & Ian Cook, *Doing Ethnographies* (London: SAGE Publications Ltd, 2007).

<sup>43</sup> Ibid.

<sup>44</sup> Shopes, “Oral History and the Study of Communities: Problems, Paradoxes, and Possibilities,” 597.

interview guide included a list of general issues to cover in the form of questions, prompts, key words and concepts and was adapted for each specific interviewee.

Written consent was sought before the interview commenced. Interviews were audio recorded, with ethics approval from the Memorial University Interdisciplinary Committee on Ethics in Human Research and the consent of the participants.<sup>45</sup> Two participants did not consent to being recorded, but consented to written notes. Each interview was transcribed and emailed to the participants for verification and redaction. Interviews were analyzed using latent content analysis and thematic coding in order to evaluate the emergent themes articulated by the interviewees.<sup>46</sup> Interview data was used to construct themes and identify relationships and patterns among variables.<sup>47</sup> These emerging themes were then analyzed in relation to broader questions surrounding community participation in mine remediation in northern Canada. First, interviews were grouped based on stakeholder identification so that interviews could be analyzed for similarities and differences within and between these groups. These groups included general community members (2), Alternatives North (2), the City of Yellowknife (4), technical consultants (1), the Giant Mine Oversight Body (GMOB) directors and employees (4), Land and Water Board and Review Board employees (3), NWT and federal government employees (5), Project Team members (5), Yellowknives Dene First Nations members (3), Yellowknives Dene First Nations employees (2), North Slave Métis

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<sup>45</sup> Memorial University ICEHR Approval number: 20162052-AR

<sup>46</sup> V. Braun & V. Clarke, "Using thematic analysis in psychology," *Qualitative Research in Psychology* 3, no. 2 (2008): 77-101; and M. Cope, "Coding Qualitative Data," in *Qualitative Research Methods in Human Geography: 3<sup>rd</sup> Edition*, ed. Iain Hay, (Don Mills, Ontario: Oxford University Press: 2010).

<sup>47</sup> Hay, *Qualitative Research Methods in Human Geography*.



Alliance employees (1).<sup>48</sup> In addition, several of these interviewees are locals, having grown up in Yellowknife or spent the majority of their life there (13). The majority of local people were involved in City government, community organizations, GMOB or with the Yellowknives Dene First Nation. The majority of government employees and project employees are more recent residents in Yellowknife (11).

Recurring themes within interviews were colour coded and then compiled based on these themes. Interviews were cross referenced with field notes and question outlines to help identify emerging themes. Analytical themes included: mistrust (of government, industry and science), communication with future generations, project boundaries and mandates, environmental degradation and injustice, long term care and stewardship, traditional knowledge, capacity and stakeholder fatigue, land claims and reconciliation, and economic opportunities. These themes directed my document analysis and formed the basis of my analysis of the issues and experiences surrounding the Giant Mine Remediation.

### **Participant Observation**

I participated in the Giant Mine Remediation Surface Design Engagement Evaluation Workshop from February 16-19, 2016, alongside Alternatives North and with the permission of the Yellowknives Dene First Nation. I was also invited to participate in the YKDFN's Giant Mine Advisory Council monthly meeting on May 26, 2016 and the first bi-annual meeting of the Giant Mine Oversight Board on May 31, 2016. In the spring

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<sup>48</sup> I found it more difficult to speak with technical consultants because they are bound by contracts with employers and were not always free to communicate openly.

of 2017 I returned to Yellowknife to follow up with interviewees, present my research to the YKDFN, Alternatives North and the GMRPT, and to attend the first annual public forum for the Giant Mine Oversight Board.

Throughout these workshops and meetings, I used methods of participant observation in order to record and analyze the proceedings. According to Guest et. al., participant observation is useful because it “opens up areas of inquiry to collect a wider range of data, ... reduces the problem of reactivity, ... gives you an intimate knowledge of your area of study... and addresses problems that are simply unavailable to other data collection techniques.”<sup>49</sup> Participant observation included being actively involved in community meetings and workshops, building rapport with the participants and spending time in the communities. Participant observation was a useful method in this research because it helped to develop a highly contextual understanding of the situation.<sup>50</sup> Participant observation was useful for determining and expanding my interview framework, for building general knowledge of the remediation situation and for developing research relationships in the community. Potential drawbacks of participant observation and interview methods which were addressed throughout the research process are that such methods are time consuming, they can be “practitioner sensitive” or biased, and it can be difficult to compare results to other studies.<sup>51</sup> Building off of already established research relationships helped to address some of these challenges, as many interviewees were already familiar with the research of the Toxic Legacies project.

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<sup>49</sup> Greg Guest, Emily Namey & Marilyn Mitchell, *Collecting Qualitative Data: A Field Manual for Applied Research* (London: SAGE Publications, 2013).

<sup>50</sup> Ibid

<sup>51</sup> Ibid.

## Positionality

Experiences, actions and identities are gendered, classed and racialized and cannot be understood outside of the context and histories of these categories; researchers should consider the context in which the research encounter takes place.<sup>52</sup> Since I was working with a First Nations community within a colonial context, this positionality was important to recognize and reflect upon. According to Howitt and Stevens, “*post-colonial* research is a reaction to and rejection of colonial research and is intended to contribute to the self-determination and welfare of ‘others’ through methodologies and the use of research findings that value their rights, knowledge, perspectives, concerns and desires and are based on open and egalitarian relationships.”<sup>53</sup> Decolonizing research goes even further than post-colonial research in an attempt to use the research process and findings to break down inequitable power relations, discriminatory discourses and social structures through which such inclusionary research is aimed at helping to empower subordinated, marginalized and oppressed others.<sup>54</sup>

Wilson speaks of Indigenous research as a ceremony, which includes *relational accountability* and research methods as strategies of inquiry and mutual sharing of information rather than simply data collection. According to Wilson, “the difference is that, rather than the truth being something that is ‘out there’ or external, reality is in the

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<sup>52</sup> Crang and Cook, *Doing Ethnographies*.

<sup>53</sup> Richard Howitt and Stan Stevens, “Cross-Cultural Research: Ethics, Methods and Relationships,” in *Qualitative Research Methods in Human Geography: 3<sup>rd</sup> Edition*, ed. Iain Hay (Don Mills, Ontario: Oxford University Press, 2010), 42.

<sup>54</sup> Linda Smith, *Decolonizing Methodologies: Research and Indigenous Peoples* (London: Zed Books, 1999); Howitt, *Rethinking Resource Management*.

relationship that one has with the truth.”<sup>55</sup> Relational accountability leads to research that is connected to a community and is a set relationships not only between people, but also between people, land and non-human beings.<sup>56</sup> In this sense, everyone involved in the research is a participant, or a co-researcher; it is not divided between researcher and subjects.

Inclusionary, decolonizing research and relational accountability directs my own research. As a white, southern female researcher, my own positionality has the potential to perpetuate systems of colonial research. In this sense, it was important to identify my positionality to research participants and to make them aware of how this research would be used and how they could shape the research themselves (see Appendix II). Several times interviewees and community members stated that part of the problem with remediation at Giant Mine was that southern experts and governments defined the process from afar. In order to work towards relational accountability and de-colonized research, my research objectives were directed and designed alongside the Yellowknives Dene First Nations through the Toxic Legacies Project and I positioned myself to spend time listening to community members throughout interviewees, workshops, public meetings, and discussions over coffee, reflecting on what Emilie Cameron calls “learning to learn”<sup>57</sup> and attempting to foster knowledge creation processes that “account for many variables, including epistemological, cultural, colonial, historical and contemporary contexts of both the researched and the researcher.” This included ongoing communication throughout the

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<sup>55</sup> Shawn Wilson, *Research is Ceremony: Indigenous Research Methods* (Halifax: Fernwood Publishing, 2008), 73.

<sup>56</sup> Ibid.

<sup>57</sup> Emilie Cameron, *Far off Metal River: Inuit Lands, Settler Stories, and the Making of the Contemporary Arctic* (Vancouver: UBC Press, 2015).

research and writing process and a return trip to Yellowknife to present the results of research and receive feedback from the YKDFN. As Absolon and Willet state, “It is putting ourselves forward that establishes these contexts, guides the research process, and determines research outcomes.”<sup>58</sup>

## Conclusion

At the Giant Mine, issues of mining and remediation extend beyond the distribution of environmental contamination and include wider social and historical issues of dispossession connected to colonialism.<sup>59</sup> In this thesis, I argue that the Giant Mine Monster can be seen as more than just an arsenic trioxide problem. It is multi-faceted, and includes the colonial processes of environmental degradation, the marginalization of the First Nations community and the failure of the government to regulate pollution. While the term Monster may be seen as inherently negative, arguably, like the prodigy of Dr. Frankenstein in Mary Shelley’s *Frankenstein*, mine wastes are of our own creation and cannot easily be locked up and forgotten about, as the technologies used to contain mine wastes have the potential to fail over time. According to Latour and Puig de Bellacasa, we must learn to love and care for our technologies and our monsters.<sup>60</sup> At the Giant Mine, local communities are now navigating how they will live with and care for the contaminated mine site far into the future.

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<sup>58</sup> Kathy Absolon and Cam Willet, “Chapter four: Putting ourselves forward: location in Aboriginal Research,” in *Research as Resistance: Critical, Indigenous and Anti-oppressive Approaches*, ed. Leslie Brown and Susan Strega (Toronto Ontario: Canadian Scholars’ Press/Women’s Press, 2005).

<sup>59</sup> Keeling and Sandlos, “Environmental Justice Goes Underground?”

<sup>60</sup> Bruno Latour, “Love your Monsters: Why we must care for our technologies as we do our children,” *The Breakthrough Journal* (Winter, 2012), accessed July 10, 2017, <https://thebreakthrough.org/index.php/journal/past-issues/issue-2/love-your-monsters>

This research tracks how the Giant Mine Monster was created, why the initial plan for arsenic remediation was rejected by the community, and how the project has been re-orientated to confront and care for the mine site, the environment and the relationships between the people affected. Chapter 2: Rethinking Remediation discusses how remediation is defined and associated with terms such as restoration, rehabilitation and repair and how these practices are connected to environmental justice, waste studies and “matters of care.”<sup>61</sup> Building off this theoretical framework, this thesis is then organized into three sections: Chapter 3: Creating the Monster; Chapter 4: Containing the Monster; and Chapter 5: Confronting and Caring for the Monster.

Chapter 3: Creating the Monster summarizes the circumstances in which the Giant Mine Monster was created, and identifies major historical points of contention that continue to influence the remediation project today. At the Giant Mine, a legacy of mining and contamination created a monster of mistrust that has continued to haunt the remediation planning process. These historical issues were not directly addressed in the early stages of remediation planning, resulting in a plan that focused on containment and limited the remediation project, not only geographically within the mine lease area, but also limited the kinds of knowledge used to plan for remediation.

Chapter 4: Containing the Monster analyzes initial approaches to remediation planning at the Giant Mine. Early on, the government-led remediation project sought to contain arsenic and limit liability, and in turn contained knowledge on remediation and limited how community stakeholders could be involved, resulting in a lack of community

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<sup>61</sup> Chapter 2 was written with contributions from Dr. Arn Keeling and is currently being prepared for submission to *Local Environment*, with myself as the primary author.

trust in the 2007 Remediation Plan. The second half of this chapter summarizes and analyzes the structure of the Environmental Assessment and community engagement throughout this process. This chapter demonstrates that despite the claim that remediation is inherently ‘good’ because it is cleaning-up and managing contaminants, it can in fact perpetuate the systems of power that led to marginalization and degradation in the first place.

Finally, in Chapter 5: Confronting and Caring for the Monster, I summarize how the Giant Mine Remediation Project has changed since the Environmental Assessment and I present community stakeholders reflections on the Giant Mine Remediation Project over the past 17 years. In this chapter, I argue that the Giant Mine case illustrates the potential for community activism to shift remediation in order to confront social issues such as environmental injustice and to care for people and the environment through reconciliation and intergenerational equity.

Definitions of remediation tend to focus on the cleanup, containment and risk mitigation of a site. This focus overlooks discussions on morals, values and community objectives for future land uses. In the conclusion, I reflect on how socio-political research on remediation is critical for understanding the broader issues of resource development and environmental justice across northern Canada. This research will contribute to a broader understanding of the social dimensions of toxic contamination and mine remediation, and the development of best practices for community engagement during mine closure. Remediation is a creative opportunity to confront historical injustices and to negotiate how the space will be remembered, valued and cared for in the future. In order to rethink remediation, the current approach to mine remediation must change from a

focus on site containment to include an emphasis on broader issues such as community engagement, reconciliation, healing and caring for the land.



## CHAPTER 2

### LITERATURE REVIEW: RETHINKING REMEDIATION

#### Introduction

Industrial scale mineral extraction engenders some of humanity's most dramatic and enduring landscape transformations. On the surface, mining entails the removal of more or less extensive areas of soil and vegetation; open-pit or strip mining methods completely remove topsoil as "overburden," often leaving behind landscapes hostile to recolonizing vegetation. Similarly, the disposal at the surface of non-ore-bearing material ("waste rock") or of the by-products of mineral extraction (tailings) provides dramatic, visible and long-lasting evidence of mining's environmental transformations. These are not simply rock piles; they may present chemical and physical environmental hazards, from the erosion or failure of tailings impoundments, to the slow leaching of heavy metals or chemicals into local waterways, to acute environmental toxicity from acid mine drainage. Mining's modification of the surface and subsurface environments often persists for decades, even centuries after the supposed 'end' of mining.

In recent decades, efforts to restore or remediate these impacts at both current and abandoned mine sites have gained momentum under the influence of growing environmental concern and regulation, and corporate embrace of more 'sustainable' mining practices.<sup>1</sup> Technical processes of mine remediation such as acid rock drainage

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<sup>1</sup> Opinions on and approaches to sustainable resource development are diverse. Some argue that sustainable mining is an oxymoron and is, in fact, impossible. For a review of sustainable development see: Andy

management, the construction of tailings covers, revegetation, soil contamination treatment and water treatment, have been widely researched.<sup>2</sup> At the same time, governments have been developing more detailed and comprehensive mine closure and remediation policies.<sup>3</sup>

Yet, while there has been increasing attention to the material, environmental and engineering challenges of remediation, there has been rather less attention given to public participation and community values associated with cleaning up mine sites.<sup>4</sup> Even when technical descriptions of remediation are presented to the community, these options are brought to the community only after experts have already defined the problem and the possible solutions.<sup>5</sup> This gap arises from a variety of factors. First, remediation is often overlooked in public and scholarly debates over the environmental impacts and benefits of mining, in spite of a growing literature on the socio-economic dimensions of closure as part of the ‘mining cycle.’ Second, mine remediation is dominated by engineering and environmental expertise around geochemistry, hydrology, and risk management, and

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Whitmore, “The Emperor’s New Clothes: Sustainable Mining?” in *Sustainable Mineral Operations in the Developing World*, ed. by B.R. Marker, M.G. Petterson, F. McEvoy, and M.H. Stephenson (London: Geological Society Special Publications, 2005); Gavin Hilson, “Sustainable Development Policies in Canada’s Mining Sector: An Overview of Government and Industry Efforts,” *Environmental Science & Policy* 3, no. 4 (2000): 201–11; Gavin Hilson, and Barbara Murck, “Sustainable Development in the Mining Industry: Clarifying the Corporate Perspective,” *Resources Policy* 26, no. 4 (2000): 227–38.

<sup>2</sup> For a summary of these processes see: Bernd G. Lottermoser, *Mine Wastes: Characterization, Treatment and Environmental Impacts. Mine Wastes, Third Edition* (Berlin: Springer, 2010).

<sup>3</sup> Dance, “Northern Reclamation in Canada;” Rhys Worrall, David Neil, David Brereton, and David Mulligan, “Towards a sustainability criteria and indicators framework for legacy mine land,” *Journal of Cleaner Production* 17 (2009): 1426–434.

<sup>4</sup> Laura Banfield and Cynthia G. Jardine, “Consultation and Remediation in the North: Meeting International Commitments to Safeguard Health and Well-Being,” *International Journal of Circumpolar Health* 72, no. 1 (2013): 1–7.

<sup>5</sup> Anne Bergmans, Göran Sundqvist, Drago Kos, and Peter Simmons, “The Participatory Turn in Radioactive Waste Management: Deliberation and the Social–technical Divide,” *Journal of Risk Research* 18, no. 3 (2015): 347–63; Gwen Ottinger, *Refining Expertise: How Responsible Engineers Subvert Environmental Justice Challenges* (NYU Press: New York, 2013).

debated in highly technical forums like environmental assessment hearings. In this sense, remediation is “rendered technical”<sup>6</sup> and tends to exclude public participation or non-expert assertions surrounding risk and remediation goals. Finally, insofar as it is understood as cleaning up or repairing environmental damage from mining, remediation is seen as improving the environment and ‘doing the good,’ and is less amenable to political or ethical challenges based on community concerns or values.

The generally positive associations of remediation with “clean-up” ignore the fact that simply containing and managing a toxic site is usually insufficient to deal with the broader histories, legacies and liabilities connected to contaminated sites and the difficulties of perpetual care for these sites.<sup>7</sup> While some research has been carried out on the containment and long-term effects of nuclear waste,<sup>8</sup> there is limited literature on the social effects and perpetual care of mine wastes such as tailings ponds and pervasive chemical contamination. Because remediation projects tend to focus on the technical, scientific or management aspects of clean-up, such projects risk continuing the environmental injustices associated with past development and obscuring blame or responsibility from industry and government for environmental degradation.<sup>9</sup>

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<sup>6</sup> The phrase “render technical” is from Tanya Murray Li, *The Will to Improve: Governmentality, Development, and the Practice of Politics* (Durham: Duke University Press, 2007).

<sup>7</sup> Keeling and Sandlos, “Zombie Mines”; Houston Kempton, Thomas A Bloomfield, Jason L Hanson, and Patty Limerick, “Policy Guidance for Identifying and Effectively Managing Perpetual Environmental Impacts from New Hardrock Mines,” *Environmental Science and Policy* 13, no. 6 (2010): 558–66.

<sup>8</sup> Shannon Cram, “Becoming Jane: The Making and Unmaking of Hanford’s Nuclear Body,” *Environment and Planning D: Society and Space* 33, no. 5 (2015): 796–812; Vincent Ialenti, “Adjudicating Deep Time: Revisiting the United States’ High-Level Nuclear Waste Repository Project at Yucca Mountain,” *Science and Technology Studies* 27, no. 2 (2014): 27–48.

<sup>9</sup> Lindsey Dillon, “Race, Waste, and Space: Brownfield Redevelopment and Environmental Justice at the Hunters Point Shipyard,” *Antipode* 46, no. 5 (2014): 1205–21.

Terms such as remediation, restoration, reclamation and rehabilitation include a wide range of practices that encompass urban brownfield redevelopment and the clean-up of oilrigs, toxic spills and military sites. This chapter focuses on how definitions on mine remediation, which focus on managing toxic hazards, can be discussed alongside terms such as restoration, reclamation, rehabilitation and repair, which seek to re-establish some kind of use or to repair land at an ecosystem level. Drawing from literatures on ecological restoration, environmental justice, discard studies, repair, and ‘matters of care,’ this chapter highlights critical, yet overlooked issues in the remediation of post-mining landscapes, particularly as they affect local communities. Theories of ecological restoration emphasize the importance of morals, ethics and value creation. Environmental justice research and discard studies push us to identify injustices and inequalities associated with the creation, management, geographies and temporalities of waste. Theories of repair and ‘matters of care’ push us beyond the *act* of remediation, towards a focus on the *ongoing processes* of trust building, reconciliation, and perpetual care for humans and nonhumans alike. Remediation and restoration projects present an opportunity for the negotiation and articulation of morals, values, emotions, histories, and physical experiences associated with a contaminated mine site.<sup>10</sup> These projects also present an opportunity for creative community discussion about relationships with the land, stewardship, perpetual care and future land uses.<sup>11</sup>

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<sup>10</sup> Laura Smith, “On the ‘Emotionality’ of Environmental Restoration: Narratives of Guilt, Restitution, Redemption and Hope,” *Ethics, Policy & Environment* 17, no. 3 (2014): 286–307.

<sup>11</sup> Anna Storm, *Post-Industrial Landscape Scars* (New York, NK: Palgrave Macmillan, 2014); Dance, “Northern Reclamation in Canada.”

## Remediation vs. Restoration: Contexts and Definitions

In response to rising concerns in the late 20<sup>th</sup> century over mining's environmental impacts, increasing scientific, regulatory and industry attention has been devoted to mine closure and remediation.<sup>12</sup> In Canada, post-closure environmental clean-up activities are typically referred to as *remediation*, although other terms such as rehabilitation and reclamation are often used interchangeably, with some temporal and regional variation.<sup>13</sup> Many definitions of *environmental remediation* highlight the technical nature of clean-up processes: environmental remediation is the “clean-up [of] operating or abandoned mines, usually focused on land and water contaminated with heavy metals, radiation and other toxic substances.”<sup>14</sup> More specifically, environmental remediation deals with the removal or mitigation of pollution or contaminants from soil, groundwater, sediment or surface water. It may also entail the engineering and stabilization of closed mine workings and tailings storage areas and some degree of landscape recontouring and/or environmental restoration, such as revegetation. According to Lima et. al., “*reclamation*, which aims to recover key ecosystem services and biogeochemical functions within a replacement ecosystem, or *rehabilitation*, which implies a repurposing of the landscape, may be the

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<sup>12</sup> D.E. Hockley and L.C. Hockley, “Some histories of mine closure, the idea,” ed. A.B. Fourie, M. Tibbett, L. Sawatsky, D. van Zyl (presentation Mine Closure Conference, Vancouver, Canada, 2015); Duane Smith, *Mining America: The Industry and The Environment, 1800-1980* (Lawrence, KA: University Press of Kansas, 1987).

<sup>13</sup> For example, in Northern Canada, the terms remediation and reclamation are used most often, however these terms have changed throughout time, and other terms such as rehabilitation are more popular elsewhere in Canada and further south (American management plans often use rehabilitation or restoration). See: Hockley and Hockley, “Some histories of mine closure, the idea;” Dance, “Northern Reclamation in Canada;” P.A. Steenhof, “Development of international standards for mine reclamation management,” (presented at Mine Closure Conference, Vancouver, Canada 2015).

<sup>14</sup> Arn Keeling and John Sandlos (eds.), *Mining and Communities in Northern Canada: History, Politics and Memory* (Calgary, Alberta: University of Calgary Press, 2015), xii.

best approaches to deal with surface mining legacies.”<sup>15</sup> These approaches imply the return of some kind of value, alongside concerns of remediating contaminants. In many jurisdictions, these considerations are now the focus of mine closure planning and regulatory reviews—as well as subjects of considerable scientific and engineering expertise.

In a broader, less technical sense, *remediation* is defined as the “act or process of remedying.”<sup>16</sup> A *remedy* is described as a “medicine or treatment that relieves pain,” or “a way of solving or correcting a problem.”<sup>17</sup> The word remedy is associated with concepts of health and healing. To begin looking at remediation as something more than the removal and management of waste, the root word ‘mediate’ also points to interesting ways to rethink the word. *Mediating* can be seen as the forming of relationships or connections; meditation is an “intervention between conflicting parties to promote reconciliation, settlement or compromise.”<sup>18</sup> *Re-mediation* therefore, could potentially be seen as the re-ordering or repairing of relationships.<sup>19</sup> Arguably, it is important to repair the relationships between groups involved in the remediation process, as relationships

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<sup>15</sup> Emphasis added, Ana T. Lima, Kristen Mitchell, David W. O’Connell, Jos Verhoeven, Philippe Van Cappellen, “The legacy of surface mining: Remediation, restoration, reclamation and rehabilitation,” *Environmental Science and Policy* 66 (2016): 227.

<sup>16</sup> Merriam-Webster Dictionary, “Definition of Remediation,” accessed Nov., 2016, <http://www.merriam-webster.com/dictionary/remediation>

<sup>17</sup> Merriam-Webster Dictionary, “Definition of Remedy,” accessed Nov., 2016, <http://www.merriam-webster.com/dictionary/remedy>

<sup>18</sup> Merriam-Webster Dictionary, “Definition of Mediation,” accessed Nov., 2016, <http://www.merriam-webster.com/dictionary/mediation>

<sup>19</sup> Robert L. France (ed.), *Healing Natures Repairing Relationships: New Perspectives on Restoring Ecological Spaces and Consciousness* (Vermont: Green Frigate Books, 2008).

developed through mining have traditionally been very exploitative for local people, especially Indigenous or marginalized groups.<sup>20</sup>

As stated above, the terms remediation and restoration are often used interchangeably. According to the Oxford English Dictionary, *restoration* is a “means of healing or restoring health,”<sup>21</sup> and in this way it is similar to remediation. More specifically however, to restore is to “return to a former state,”<sup>22</sup> and the term restoration is often used in regards to the restoration of art, historical buildings and ruins.<sup>23</sup> In the context of mining, restoration typically implies “an attempt to address the ecological impacts of mining through a return (as nearly as possible) to the ecological conditions that existed prior to mining.”<sup>24</sup> According to Marcus Hall, restorationists work to bring back ideal versions of nature, and therefore are “automatically testing assumptions about past landscapes and the human role in the past.”<sup>25</sup> In *remediation* projects, the politics of who defines this past, and how it is negotiated, articulated and memorialized is often overlooked. Theories of *ecological restoration* on the other hand have increasingly interrogated and critiqued the broader, moral, ethical and political implications of restoration. While the material and technical complexities of contaminated sites should

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<sup>20</sup> Traci Brynne Voyles, *Wastelanding: Legacies of Uranium Mining in Navajo Country* (Minneapolis: University of Minnesota Press, 2015).

<sup>21</sup> Oxford English Dictionary, “Restoration,” accessed Nov., 2016, retrieved from <http://www.oed.com/view/Entry/163986?redirectedFrom=restoration#eid>

<sup>22</sup> Oxford English Dictionary, “Restoration,” accessed Nov. 2016, retrieved from <http://www.oed.com/view/Entry/163986?redirectedFrom=restoration#eid>

<sup>23</sup> C. Howe, J. Lockrem, H. Appel, E. Hackett, D. Boyer, R. Hall, M. Schneider-Mayerson, et al. “Paradoxical Infrastructures: Ruins, Retrofit, and Risk,” *Science, Technology & Human Values* 41, no. 3 (2016): 547–65; Marcus Hall, *Earth Repair: a transatlantic history of environmental restoration* (Charlottesville: University of Virginia Press, 2005); Yasha Rohwer and Emma Marris, “Renaming Restoration: Conceptualizing and Justifying the Activity as a Restoration of Lost Moral Value rather than a Return to a Previous State,” *Restoration Ecology* 24, no. 5 (2016): 674–79.

<sup>24</sup> Keeling and Sandlos, *Mining and Communities in Northern Canada*.

<sup>25</sup> Hall, *Earth Repair*, 3.

not be understated, analyzing mine remediation within a broader conceptual framework, and applying debates and discussions of ecological restoration is valuable in that such an approach acknowledges the importance of both the material and socially constructed nature of mine waste.

### **Context of Ecological Restoration**

Hall traces ideas of environmental restoration back to the late 1800s, focusing on George Perkins Marsh's book *Man and Nature* published in 1864. In the first sentences of this book, Marsh states that one of his objectives was "to suggest the possibility and the importance of the restoration of disturbed harmonies."<sup>26</sup> Hall argues that this suggestion was a shift from previous beliefs that natural agency was the cause of most degradation.<sup>27</sup> In the 18<sup>th</sup> and 19<sup>th</sup> centuries, mining landscapes were seen as a "victory in the quest for knowledge and superiority over nature."<sup>28</sup> However, by the late 1800s, Marsh placed humans at the center of environmental degradation, making humans responsible for restoration. In the 20<sup>th</sup> century, there was another shift, specifically in North America, towards the idea of *rewilding*. This can be seen in Aldo Leopold's work on returning degraded nature to the wild state it was in before.<sup>29</sup> Recognizing these shifts and tensions, Francaviglia states that, "20<sup>th</sup> century mining landscapes came to symbolize the turmoil between what our culture elects to view as two opposing forces: culture and nature."<sup>30</sup>

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<sup>26</sup> George Perkins Marsh, *Man and Nature* (New York, NY: Charles Scribner, 1864), taken from Hall, *Earth Repair*, 7.

<sup>27</sup> Taken from Hall, *Earth Repair*, 8.

<sup>28</sup> Richard V. Francaviglia, *Hard Places: Reading the Landscape of America's Historic Mining Districts*, (Iowa City: University of Iowa Press: 1991), 215.

<sup>29</sup> Aldo Leopold, *A Sand County Almanac* (New York, NY: Oxford University Press, 1949).

<sup>30</sup> Francaviglia, *Hard Places*, 215.



Mining sites began to be perceived as landscapes in disequilibrium, places that needed to be brought back into harmony through restoration.

As shown by Hall, the idea of converting damaged environments into ideal states long predated the establishment of U.S. and Canadian federal clean-up programs. However, in North America most systematic, widespread discussion of restoration began in the late 1970s. Many mines and smelters that had opened in the first half of the 20<sup>th</sup> century, without strict environmental regulations, began shutting down and governments were forced to think of ways to handle the remaining environmental liabilities.<sup>31</sup> This increased focus on mine clean-up coincided with the rise of environmentalism in the 1960s and 70s, and the creation of environmental protection laws and other regulatory mechanisms throughout the U.S. and Canada.<sup>32</sup> The initiation of the Superfund program in the United States in the 1980s was also a major turning point for the recognition and restoration of toxic sites on a large-scale, federal level.<sup>33</sup> In addition, with the increasing influence of environmentalist scholarship such as Rachel Carson's *Silent Spring*, it was no longer acceptable to simply live with toxicity.<sup>34</sup>

Initially, government programs focused on restoration ecology and land management practices that would help to restore land to an optimum, productive state.<sup>35</sup>

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<sup>31</sup> Examples in Canada include the Sydney Tar Ponds in Nova Scotia, the Sudbury Integrated Nickel Operations, the Britannia Mine in B.C., the Port Radium Eldorado Mine in the N.W.T., and the Colomac Mine in the N.W.T.

<sup>32</sup> The Bureau of Land Management and the Forest Service, *Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines* (2007); Steve Roberts, Marcello Veiga, and Carlos Peiter, "Overview of Mine-Closure and Reclamation in the Americas Executive Summary," (Vancouver, Canada: International Development Research Center, 2000); Dance, "Northern Reclamation in Canada."

<sup>33</sup> David Brooks, *Restoring the Shining Waters: Superfund Success at Milltown, Montana*, (Oklahoma: University of Oklahoma Press, 2015).

<sup>34</sup> Carson, Rachel, *Silent Spring* (Boston: Houghton Mifflin, 1962).

<sup>35</sup> Brooks, *Restoring the Shining Waters*.

However, in the early 1990s scholars began to acknowledge that restoration efforts had largely progressed on an ad hoc, site and situation specific basis, with little development of general theory or principles that would allow the transfer of methodologies from one situation to another.<sup>36</sup> This ad hoc situation was largely based on Western scientific approaches to land use planning and management, focused on identifying point sources of pollution and creating measurable indicators for success, or working back towards an identified previous, or optimum state. These key practices are still important to restoration processes today, however, academic discourse around restoration has been shifting and has begun to acknowledge the importance of creating or restoring environmental, economic, and cultural value to degraded sites; this is the focus of reclamation and rehabilitation.<sup>37</sup> In calling a project a *remediation* project, governments and industry limit the narrative to one of containment and management. In remediation processes, there is a danger that a focus on site containment, risk management and mitigation overlooks the broader discussions and theoretical contributions of ecological restoration, reclamation and rehabilitation.

### **Insights from Ecological Restoration Theory**

Beginning in the 1990s, academics and practitioners of ecological restoration began to critique the idea that landscapes could actually be returned to some former state. Elliot argued that such an approach justified the destruction of ecosystems; he saw

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<sup>36</sup> Richard Hobbs and David Norton, "Towards a Conceptual Framework for Restoration Ecology." *Restoration Ecology* 4, no. 2, (1996):93-110.

<sup>37</sup> Richard Hobbs, "Grieving for the Past and Hoping for the Future: Balancing Polarizing Perspectives in Conservation and Restoration," *Restoration Ecology* 21, no. 2 (2013): 145–48.

restoration as a way of rationalizing destruction and equated it with an art forgery.<sup>38</sup> Katz reflected these critiques of restoration, but framed it as anthropocentric, resulting in the ‘improvement’ of ecosystems simply for the use or aesthetic value of humans.<sup>39</sup> However, Katz and Elliot weren’t necessarily arguing *against* cleaning up contamination. Katz instead calls us to recognize that it is really a process of human values:

We are not restoring nature: we are not making it whole and healthy again. Nature restoration is a compromise; it should not be a basic policy goal. It is a policy that makes the best of a bad situation; it cleans up our mess. We are putting a piece of furniture over the stain in the carpet, for it provides a better appearance. As a matter of policy, however, it would be much more significant to prevent the causes of the stains.<sup>40</sup>

In response to this, Hall argues that Katz and Elliot leave little room for “considering the possibility that humans and their activities may themselves be part of nature.”<sup>41</sup> Along these same lines, Light argues that there is a difference between malicious and benevolent restoration, where restoration focuses on fixing and repairing damage rather than being a justification for damage or a cover up.<sup>42</sup> in a sense, analogous to an art restoration rather than an art forgery.<sup>43</sup> According to Smith, what can be concluded from the arguments of both Elliot and Katz is that even if 'restored nature' is perceived as nothing more than culturally produced artefacts, the restoration of human relationships with nature remains possible.

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<sup>38</sup> Robert Elliot, *Faking nature: the ethics of environmental restoration* (London: Routledge, 1997).

<sup>39</sup> Eric Katz, *Nature as Subject: Human Obligation and Natural Community* (Oxford: Rowman and Littlefield Publishers, Inc., 1997).

<sup>40</sup> Ibid. 102.

<sup>41</sup> Hall, *Earth Repair*.

<sup>42</sup> Andrew Light, “Ecological restoration and the culture of nature: a pragmatic perspective,” in *Restoring Nature, Perspectives from the Social Sciences and Humanities*, ed. P.H. Gobster and R. B. Hull (Washington, DC: Island Press, 2000).

<sup>43</sup> Smith, “On the Emotionality of Environmental Restoration.”

Along similar lines, Rohwer and Marris complicate the definition of restoration by proposing a redefinition of restoration to mean a “restoration of moral value rather than a restoration of a historical state.”<sup>44</sup> They emphasize that when talking about restoration and remediation, we need to get “comfortable talking about choices, intentions, values and justifications in a world where historical fidelity no longer reigns supreme.”<sup>45</sup> Hobbs mirrors this analysis, stating that within the discipline of Restoration Ecology, definitions have shifted, causing a divide between those who see restoration as historical fidelity and those who use the approach of making healthy ecosystems, what he terms ‘moral restoration.’<sup>46</sup> According to Rohwer and Marris, “It’s about intent... We either intentionally modify or intentionally don’t modify but we make an intentional decision to create a landscape that means something to us,”<sup>47</sup> and in this sense, economic, cultural and social values are created within and through the processes of remediation and restoration.

Building on the idea of restoration as a moral exercise, Smith analyzes restoration as a form of ‘ecological redemption.’ According to Smith, “restoration-as-redemption is achieved through a ‘spirit of performance’ and the invention of ritual.”<sup>48</sup> Restoration provides a context for negotiating relationships with the environment and the use of performance and ritual, such as healing ceremonies and volunteer or stewardship programs provide a way of dealing with shame and creating value in a once degraded site. In this sense, environmental restoration “may be less a process of remedying damaged

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<sup>44</sup> Rohwer and Marris, “Renaming Restoration.”

<sup>45</sup> Ibid.

<sup>46</sup> Hobbs, “Grieving for the Past and Hoping for the Future.”

<sup>47</sup> Rohwer and Marris, “Renaming Restoration.”

<sup>48</sup> Smith, “On the Emotionality of Environmental Restoration.”

natural systems than of discovering our biases about environmental damage, less a process of re-creating past landscapes than of discovering our myths about idealized landscapes.”<sup>49</sup> Framing environmental restoration in this way can reveal other moral, ethical and emotional structures bound up in discourses and practices of restoration.<sup>50</sup>

Restoration practices also reveal our assumptions about degradation and nature. Different ideas about what “nature” is and how degradation occurs lead to different restoration practices. For example, Robertson outlines several cases of mines in the United States where locals fought to preserve some of the physical, industrial features that defined the mining landscape, while still protecting community and environmental health. In this sense, the degradation and change caused by mining became a part of local landscape perspectives and identities.<sup>51</sup> Mining landscapes have stories to tell. There are “messages hidden in the landscapes that go beyond technology to include some of our deepest cultural values.”<sup>52</sup> However, Robertson and Francaviglia do not emphasize that such landscape identities can also be fractured and controversial. Different community members can have different senses of the same place caused by a variety of experiences, such as discrimination, racism, sexism, and economic and political marginalization.<sup>53</sup> While exposing and memorializing the past, restoration can also foster a new ‘sense of place,’ and can “restore faith and confidence in an area.”<sup>54</sup> Therefore, Hall suggests that

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<sup>49</sup> Smith, “On the Emotionality of Environmental Restoration.”

<sup>50</sup> Ibid.

<sup>51</sup> David Robertson, *Hard as The Rock Itself: Place and Identity in the American Mining Town* (Colorado: University of Colorado Press, 2006).

<sup>52</sup> Francaviglia, *Hard Places*, 2.

<sup>53</sup> Volyes, *Wastelanding*.

<sup>54</sup> Smith, “On the ‘Emotionality’ of Environmental Restoration.”

before setting out to repair degraded land, there must first be some kind of discussion or consensus on the ideas of degradation, historical memories and restoration.<sup>55</sup>

Identifying what is valuable and what the goals of restoration are, means thinking about, articulating, and justifying values, including the technical, scientific, historical, political and economic considerations. Although the terms remediation and restoration are often used interchangeably, they are fundamentally quite different conceptual approaches to cleaning up mine sites. In reality, the majority of mine sites are remediation projects. It is often nearly impossible to actually clean or restore a site to full ecological integrity. In the majority of cases, the decision comes down to removing the contaminants or stabilizing them on site. These are *remediation* problems and should be recognized as such. Concepts such as reclamation and rehabilitation, which focus on restoring ecosystem function and creating some kind of land use value, offer a middle ground, with the recognition that destroyed land can likely never be restored. However, the conceptual and practical approaches of *restoration* should be brought to bear on these remediation problems. The ideals of morality, redemption, restoring cultural, social and economic value to the site, recognizing the historical value of a place and planning for future land uses; these are all essential parts of the healing process that should not be separated from remediation practice and policy. In multi-stakeholder project situations, identifying, articulating and justifying such values and goals can engender a better understanding of communication, trust and community engagement.<sup>56</sup> Higgs suggests that, "ecological

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<sup>55</sup> Hall, *Earth Repair*.

<sup>56</sup> Leah Horowitz, "'Twenty Years Is Yesterday': Science, Multinational Mining, and the Political Ecology of Trust in New Caledonia," *Geoforum* 41, no. 4 (2010): 617–26.

restoration is synonymous with the restoration of hope."<sup>57</sup> When there is trust and communication, there is room for healing, justice and hope.

### **Justice and Waste: Justice through Remediation**

Light argues that, "even if we were to grant Katz his position that it is impossible to restore nature, we may still have moral obligations to try to restore nature on the grounds of restitutive justice and a principle of restitution."<sup>58</sup> While most ecological restoration literature focuses on the relationship between society and nature, placing remediation and restoration within an environmental justice (EJ) framework helps to approach both the human-nature relationships and the human-human relationships connected to degraded mining environments. An EJ approach situates environmental degradation within local political contexts and power structures, identifies instances of inequality and disenfranchisement, and provides a stage for calls to action. However, while siting instances of inequality and power imbalances, EJ literature often overlooks the creation, valuation, geography and temporality of the waste itself. Therefore, combining an EJ approach with discard studies allows us to identify and address both the political and material contexts of mine waste. Bringing together discussions on and conflicts over values, morals, and ethics and the actual materiality of the site sets the stage for bringing together remediation and restoration and planning for perpetual care.

Remediation and restoration processes can and should be used as a mechanism for justice. Marginalized people have experienced mining differently. In fact, some

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<sup>57</sup> Eric Higgs, *Nature by Design* (Cambridge, Mass: MIT Press, 2003).

<sup>58</sup> Light, "Ecological restoration and the culture of nature: a pragmatic perspective."

communities have *become* marginalized through destructive mining practices, especially within the context of colonial expansion.<sup>59</sup> For example, through the analysis of the effects of uranium mining on the Navajo peoples' health and way of life, Voyles argues that through the process of 'wastelanding' landscapes such as deserts, abandoned mines, and industrial sites are produced and perceived as wasted, derelict or useless. The people who live in and rely on these landscapes are also 'wasted' in the sense that their bodies and their cultures become a waste product of extractive industries, and the perception of their homeland as a 'wasteland' is a form of injustice.<sup>60</sup> Racism, 'wastelanding,' gender and political disenfranchisement introduce unequal effects of toxicity and mining, often resulting in calls for environmental justice.<sup>61</sup>

While EJ studies have traditionally focused on identifying and mapping cases of inequality associated with waste, many academics now see environmental justice as something that cannot be approached only through the collection of quantitative data and the analysis of the distribution of waste sites.<sup>62</sup> Accordingly, there has been a shift towards a broader conceptualization of EJ. Holifield identifies the inclusion of the concepts of *recognition*, *participation* and *capabilities* as one important aspect of this shift.<sup>63</sup> In addition to this shift, Pellow acknowledges the conceptual, theoretical and methodological issues with environmental justice research and stresses the need to

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<sup>59</sup> Voyles, *Wastelanding*; Bergmans et al., "The Participatory Turn in Radioactive Waste Management."

<sup>60</sup> Voyles, *Wastelanding*.

<sup>61</sup> Ibid.

<sup>62</sup> Robert D. Bullard, "Environmental Justice: It's More than Waste Facility Siting," *Social Science Quarterly* 77, no. 3 (1996): 493-494; Keeling and Sandlos, "Environmental Justice Goes Underground? Historical Notes from Canada's Northern Mining Frontier," *Environmental Justice* 2, no. 3 (2009).

<sup>63</sup> G. Walker and H. Bulkeley (2006), "Geographies of Environmental Justice," *Geoforum* 37, no. 5 (2006): 655.



address how environmental inequalities are actually produced.<sup>64</sup> Pellow outlines three important points that, he argues, have been overlooked in EJ literature: the process of history, the role of multiple stakeholder relationships and a life cycle approach to production and consumption.<sup>65</sup> These same points can be applied to remediation and restoration.

How can justice actually be brought about through remediation and restoration? The ideas of recognition, participation and capabilities emphasize the importance of the inclusion and communication of all stakeholders and the participation and engagement of community members throughout the entire process. In addition, capabilities of community members can be enhanced through remediation processes. Remediation projects can offer jobs for locals, long-term maintenance positions, and opportunities for communities to organize around a common cause.<sup>66</sup> To care about and live with waste in a sustainable manner, which includes the recognition and participation of marginalized community members and the increase of capabilities for those negatively affected in the past, is to bring about environmental justice in a practical, long term manner.

If remediation is to bring about environmental justice, it must be seen as a process of rebuilding or reconciling relationships between people and the land. Reconciliation is defined as “the restoration of friendly relations...[or] the action of making one view or belief compatible with another... [or] the action of making financial accounts consistent;

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<sup>64</sup> Pellow, “Environmental Inequality Formation: Toward a Theory of Environmental Justice.”

<sup>65</sup> Ibid.

<sup>66</sup> Smith, “On the ‘Emotionality’ of Environmental Restoration.”

harmonization.”<sup>67</sup> According to the Canadian Truth and Reconciliation Commission, reconciliation is “very hard to categorize or explain... it is at its core very individual, yet when considered collectively, reconciliation can change the very way we look at ourselves and at our fellow citizens.”<sup>68</sup> Within a context of reconciliation, remediation can contribute to environmental justice through an official apology or recognition of marginalized communities and the injustices they have suffered due to mining. Including reconciliation within the EJ and remediation dialogue can also bring about practical strategies for compensation and direct socio-economic involvement in management, monitoring and long-term care of a site. Tsosie, using the case study of the remediation of radioactive contamination on Navajo lands in the United States, argues for an “ethics of remediation,” which includes reconciliation with First Nations peoples:

When we consider the question of justice, we often ask whether there is a ‘fair’ distribution of goods and harms... the public good is constructed at the cost of placing the harms on Indigenous peoples. This constitutes environmental injustice, and possibly a form of environmental racism that negates the equal dignity of Indigenous peoples by sacrificing their health and well-being for the good of the majority society... science policy continues to determine what a ‘safe’ level of contamination is and what acceptable technologies for mining are. The dominant society also constructs the legal framework that governs redress for harm... Indigenous people are excluded from the creation of these policies and therefore become victims of such policies. These policies omit the experiences of harm as spiritual and cultural.<sup>69</sup>

According to Tsosie, such science based policy approaches to remediation also “omit the testimony of Indigenous community members as ‘experts’ in favour of scientific and

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<sup>67</sup> Oxford English Dictionary, “Reconciliation,” accessed Nov. 2016, <https://en.oxforddictionaries.com/definition/reconciliation>

<sup>68</sup> Truth and Reconciliation Commission of Canada, “Reconciliation: Towards a New Relationship,” accessed August 31, 2017, <http://www.trc.ca/websites/reconciliation/index.php?p=356>.

<sup>69</sup> Rebecca Tsosie, “Indigenous Peoples and the Ethics of Remediation: Redressing the Legacy of Radioactive Contamination for Native Peoples and Native Lands Indigenous Peoples and the Ethics of Remediation,” *Santa Clara Journal of International Law* 13, no. 1 (2015): 271.

economic accounts of harm.”<sup>70</sup> Tsosie states that we must heal these lands with the heart *and* the mind. Reconciliation makes space for Indigenous testimony and accounts of harm to be taken seriously. Reconciliation is often defined as healing relationships between people, but healing relationships with land is also important in overcoming colonial relations.

Alongside the broader processes of reconciliation and remediation, apologies and redress for historic wrongs can be a symbolic, creative and generative trust-building process:

The period leading up to an official apology presents an opportunity for survivors and state officials to engage in a dialogue regarding the nature of the apology to be offered... this process of dialogue itself has a valuable role to play in a process of mutual education, mutual understanding, and the longer term process of reconciliation.<sup>71</sup>

Murphy argues that, “official apologies have both a moral and practical role to play in a process of reconciling with historic injustice.”<sup>72</sup> Place can also play an important role in apology and reconciliation, especially with remediation, which is intimately connected to land and geography. Not only can an official apology happen on the site of injustice, an apology can include a promise for practical, reconciliatory acts through remediation and restoration of land and relationships to that land. An official apology is also a way to document and communicate historic injustices with future generations: “Official apologies are also a part of the process of constructing a public memory of injustice that can serve as a cautionary note to future generations...”<sup>73</sup> Apologies officially

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<sup>70</sup> Tsosie, “Indigenous Peoples and the Ethics of Remediation.”

<sup>71</sup> Michael Murphy, “Apology, Recognition and Reconciliation,” *Human Rights Review* 12 (2010): 49.

<sup>72</sup> *Ibid.*, 48.

<sup>73</sup> *Ibid.*, 65.

acknowledge responsibility, symbolically restore relations, offer closure from the past and a path forward to trust and respect.

Focusing simply on the technical fixes allows responsible parties to cleanse themselves of social responsibility and overlook past injustices, arguing that they have a mandate to clean the site and that they have to stick to the science. Dillon, argues that narrow, technical approaches to restoration allow governments and industry to “defer responsibility for the social effects of industry.”<sup>74</sup> She goes on to write that, “maintaining a scientific approach to waste management, cleansed of its social and geographical relations, also allows the Navy to present its brownfield redevelopment project as a story of progress and improvement.”<sup>75</sup> Building on these ideas, Krupar states that bureaucratic, technical approaches to re-greening and clean-up mobilize certain kinds of power through expert knowledge, monitoring, and control of the site.<sup>76</sup> However, as Tsosie highlights in her ‘ethics of remediation,’ social effects of mine waste and justice for these effects should be considered an equally important liability. Together, environment justice and reconciliation processes call for an acknowledgment of responsibility for environmental and societal harms.

### **Justice and Waste: Articulating Waste**

Remediation, in a social justice sense, has to address waste in the context of what Dillon calls ‘waste formations,’ including the valuation, temporality and geography of

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<sup>74</sup> Dillon, “Race, Waste, and Space.”

<sup>75</sup> Ibid.

<sup>76</sup> Shiloh Krupar, *Hot Spotters Report: Military Fables of Toxic Waste* (Minneapolis, Minn: University of Minnesota Press, 2013), 19; See also, Ottinger, *Refining Expertise*.

waste and the power relations created around waste, in order to achieve some kind of reconciling act or healing process. While environmental justice provides a framework to analyze the historical and social aspects of mine sites and the unequal human relations created through mining, it does not explicitly address social theories of waste or the materiality of mine waste. An environmental justice framework can be seen as a rallying point, an acknowledgment of inequality, and a call for better governance, industrial development and management. However, remediation and restoration are not just about where waste is in relation to marginalized communities. These processes are also about social perceptions of waste, how waste is valued, how waste moves and flows through environments, and how it perpetuates throughout time. Simply recognizing that certain groups of people have been negatively affected and ensuring their participation in the process of remediation is not enough, as colonial power structures can continue throughout these projects. As Tsosie notes, problems of cumulative impacts and intergenerational injustices also need to be acknowledged through an ‘ethics of remediation.’<sup>77</sup>

In connecting waste, remediation, and justice, we must also take into account theories of waste and investigate *how* certain relationships and inequalities develop around waste. When contemplating remediation, stakeholders need to ask: how was the waste created and managed in the past, how will this material act in the future, and what are the cultural, environmental and economic valuations of this waste?<sup>78</sup> Along with understanding the material characteristics of waste, understanding the colonial, racial, and

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<sup>77</sup> Tsosie, “Indigenous Peoples and the Ethics of Remediation.”

<sup>78</sup> For a summary of waste and waste management theory see: Joshua Reno, “Waste and Waste Management,” *Annual Review of Anthropology* 44 (2015): 557–72.

gendered context within which waste is generated, contained, and managed carries important implications for environmental justice claims and best practices of remediation and restoration.<sup>79</sup> In each specific case there is a need to collectively define mine waste and the specific ways that remediation and restoration will deal with that waste and ensure environmental justice. Inherent in such questions are the challenges of the valuations, temporalities and geographies of waste.

How we define and manage waste, pollution and environmental degradation depends on values, politics and social relations. Waste is often perceived as the opposite of economic value: “Waste is a category formed always in relation to value.”<sup>80</sup> Most discussions in the mining industry focus on economic values and tend to overlook broader cultural implications. Echoing Francaviglia and Richardson’s insights on mining landscapes and community identity, Hall writes that just like beauty, degradation is in the eye of the beholder.<sup>81</sup> Often in the case of mining, contaminants are either contained and a community must live with the waste far into the future, or the contaminants are moved elsewhere and become someone else’s problem, emphasizing and exacerbating political relations, discrimination and issues of environmental injustice.<sup>82</sup> Some wastes become ‘re-commodified’ and transformed from waste into an economically valuable commodity.<sup>83</sup> Other mine wastes, such as overburden, are not considered ‘toxic’ and are

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<sup>79</sup> Voyles, *Wastelanding*.

<sup>80</sup> Dillon, “Race, Waste, and Space.”

<sup>81</sup> Francaviglia, *Hard Places*; Robertson, *Hard as The Rock Itself*; Hall, M., *Earth Repair*.

<sup>82</sup> Steve Lerner, *Sacrifice Zones: the front line of toxic chemicals in the United States* (Cambridge Mass: MIT Press, 2010).

<sup>83</sup> Karen Hudson-Edwards, Heather E. Jamieson, and Bernd G. Lottermoser, “Mine Wastes: Past, Present, Future,” *Elements* 7, no. 6 (2011): 375–80.

used in building dams, roads and other infrastructure.<sup>84</sup> Landmarks such as mine shafts can be considered waste to be removed, or historical monuments. Most recently, as high-grade ore bodies become increasingly rare and with changes in technology, what was once considered waste, may again be mined. In this way, “mining by-products and landscapes may shift between the categories of ‘waste’ and ‘value’,”<sup>85</sup> depending on economic, environmental and cultural valuations.

Dealing with waste is dealing with social and material relations, and in this sense, we have to ask ourselves if our definitions and management of contaminants deepens or continues the discrimination and marginalization stemming from the original creation of waste or ‘wastelands.’<sup>86</sup> Remediation values are intimately tied to the values and perceptions of such ‘wasted’ land: is the land considered a toxic wasteland, an unused barren landscape, a historically valuable site, a ‘home’ for survival and production, or a sacred space?<sup>87</sup> Berger questions why we reclaim: “does society promote reclamation activities out of guilt or shame over the destruction caused by consumption-driven mining? What ethical values determine thoughts and methods of reclamation?”<sup>88</sup> In many ways, mine wastes can be considered industrial ruins, associated with many different versions of history. According to Jakle and Wilson, “ruins reflect the past, romance, and nostalgia, and at the same time represent risk, commodification and neglect... Where some people see ruins, others see homes situated within painful processes of

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<sup>84</sup> Lottermoser, *Mine Wastes: Characterization, Treatment and Environmental Impacts*. Mine Wastes.

<sup>85</sup> Arn Keeling, “Mineral Waste,” in *SAGE Encyclopedia of Consumption and Waste: the Social Science of Garbage* (California, U.S: SAGE Publications, 2012): 553.

<sup>86</sup> Voyles. *Wastelanding*.

<sup>87</sup> Voyles *Wastelanding*; Alan Berger, *Reclaiming the American West* (New York: Princeton Architectural Press, 2002).

<sup>88</sup> Alan Berger, *Reclaiming the American West*, 60.

transformation.”<sup>89</sup> Identifying differing values amongst stakeholders and outlining shared objectives and ethics can help to define how a community values the mine site, which in turn helps to define and direct the parameters of remediation outside of scientific technicalities.

Building on the challenges of identifying common values of mine waste, issues of temporalities and geographies of waste can further complicate remediation and restoration projects. The legacies of mines can continue to haunt the surrounding environment and nearby communities for generations to come.<sup>90</sup> While investigating the idea of industrial ruination, Mah states, “each phase of industrial ruination is situated along a continuum between creation and destruction, fixity and motion, expansion and contraction. Over time, landscapes of industrial ruination will become landscapes of regeneration, reuse, demolition, or ruination once again.”<sup>91</sup> Within mine remediation planning, there is a lot of focus on creating a site that requires minimal long-term monitoring and management of waste, the ideal being a ‘walk-away’ solution. However, this is rarely the case.<sup>92</sup> In mine remediation processes, there seems to be a lack focus on long-term care.<sup>93</sup> For example, it is hard to determine how a tailings cover will change in thousands of years or if the tailings underneath will continue to pollute the surrounding area if the covers fail. As Nixon argues, legacies of waste can bring about “slow violence,” as cumulative effects

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<sup>89</sup> John Jakle and David Wilson, *Derelict Landscapes: The Wasting of America's Built Environment* (Savage: Rowman and Littlefield Publishers, 1992); taken from Alice Mah, *Industrial Ruination, Community and Place: Landscapes and Legacies of Urban Decline* (Toronto: University of Toronto Press, 2012), 9.

<sup>90</sup> Sandlos and Keeling, “Zombie Mines and the (Over)burden of History.”

<sup>91</sup> Alice Mah, *Industrial Ruination, Community and Place: Landscapes and Legacies of Urban Decline*, 9.

<sup>92</sup> O'Reilly, “Liability, Legacy and Perpetual Care.”

<sup>93</sup> Joan Kuyek, “The Theory and Practice of Perpetual Care of Contaminated Sites,” Alternatives North submission to the Mackenzie Valley Environmental Impact Review Board (July 2011).



influence communities for generations to come.<sup>94</sup> Along these same lines, Erikson argues that rather than seeing a disaster as one sudden, disruptive event, toxic waste can be framed as a “slow disaster,” resulting in what is called ‘chronic dread’ and a sense of helplessness among those exposed or those who think they could potentially be exposed.<sup>95</sup>

There are thousands of chemical waste sites globally that present long-term perpetual care issues, however, there is little planning for managing and communicating these challenges far into the future. One area of waste management that has taken into account long-term planning is research on nuclear waste containment. For example, in Carlsbad, New Mexico, the United States Department of Energy has developed the Waste Isolation Pilot Plant, the world’s first permanent nuclear waste repository.<sup>96</sup> Research for long-term radioactive waste management has investigated best practices for containing waste and has hypothesized possible ways to use physical barriers and passive institutional controls such as text, symbols and signs to ensure that people in the future know how to manage and avoid disturbing that site.<sup>97</sup> Although initial research focused on technical aspects of containing nuclear waste, increasingly, researchers, companies and governments are looking at the importance of involving citizens in these planning

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<sup>94</sup> Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, Mass: Harvard University Press, 2011).

<sup>95</sup> Kai Erikson, *A New Species of Trouble: Explorations in Disaster, Trauma, and Community* (New York, NY: W.W. Norton and Company, 1994).

<sup>96</sup> Waste Isolation Pilot Plant, <http://www.wipp.energy.gov/wipprecovery/recovery.html>

<sup>97</sup> John Sandlos, Arn Keeling, and Kevin O’Reilly, *Communicating Danger: A Community Primer on Communicating the Arsenic Hazards at Yellowknife’s Giant Mine to Future Generations* (2014), [http://www.toxiclegacies.com/wordpress/wp-content/uploads/Comm\\_Future\\_Gen\\_YK\\_Report\\_Sep-2014-FINAL.pdf](http://www.toxiclegacies.com/wordpress/wp-content/uploads/Comm_Future_Gen_YK_Report_Sep-2014-FINAL.pdf)

processes.<sup>98</sup> However, as Bergmans et al. argue, problems and possible solutions are often only brought to the community after they have already been defined by technical experts: "This maintains a notional divide between the treatment of technical and social aspects of radioactive waste management and raises pressing questions about the kind of choice affected communities are given if they are not able to debate fully the technical options."<sup>99</sup> While there are important differences between remediating mine sites and managing nuclear waste repositories, including geographic location and social perceptions of the waste, there are important lessons to be learned from research on nuclear waste management. In addition, it is important to question why the majority of research has been directed towards nuclear waste management, while overlooking the long-term management of other types of mining waste.

‘Slow violence,’ ‘slow disasters’ and the complexities of perpetual care are not easily defined geographically either. Continuous pollution or the potential for contamination implies “uneven geographies, affecting certain bodies and areas more than others.”<sup>100</sup> In addition, remediation might not entirely clean up a site and often does not extend beyond certain arbitrary boundaries such as land leases or territorial boundaries, disregarding the ability of waste to flow, move and change. Mine wastes leak and permeate barriers, transforming into different entities in the process.<sup>101</sup> According to Bird, remediation often focuses on fixing or containing the point source of pollution, but

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<sup>98</sup> Cram, “Becoming Jane: The Making and Unmaking of Hanford’s Nuclear Body.”

<sup>99</sup> Bergmans, et al., “The Participatory Turn in Radioactive Waste Management,” 347; See also, Ottinger, *Refining Expertise*.

<sup>100</sup> Carmella Gray-Cosgrave, Max Liboiron, and Josh Lepawsky, “The Challenges of Temporality to Depollution and Remediation,” *S.A.P.I.E.N.S* 8, no. 1 (2015).

<sup>101</sup> Joshua Reno, “Waste and Waste Management,” *Annual Review of Anthropology* 44 (2015): 557–72; Nicky Gregson and Mike Crang, “Materiality and Waste: Inorganic Vitality in a Networked World,” *Environment and Planning A* 42, no. 5 (2010): 1026–32.

doesn't always look at long-term effects 'downstream,' or outside the physical limits of the mine site. For example, sediments in rivers are a source of long-term contamination that is difficult to track, map, quantify and remediate.<sup>102</sup> Such examples emphasize that waste containment and stabilization is not an easy task, temporally or geographically, and requires continual monitoring, and re-evaluation as waste moves and changes. In addition, focusing on a single mine site can cause projects to overlook or underestimate cumulative effects of other mines or developments in the area.

Remediation practices have largely failed to deal with the prospects of perpetual care on large temporal and geographic scales. Gray-Cosgrove et al., argue that a "slow disaster" is a fitting concept for remediation: "Disaster occurs when the usual methods of triage no longer work in the face of new scales of crisis, when efforts to remediate and depollute in the face of extremely long-lived pollutants are a type of disaster in and of themselves. Thus... [slow disasters] also describe the crisis of methodology facing management of 21<sup>st</sup> century wastes."<sup>103</sup> If remediation is approached as a technical project, without a community discussion of the value, temporalities and geographies of waste, the potential for waste to become a slow disaster increases. In such cases, remediation becomes a reactionary response to slow disasters rather than a long-term solution.

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<sup>102</sup> Graham Bird, "The Influence of the Scale of Mining Activity and Mine Site Remediation on the Contamination Legacy of Historical Metal Mining Activity," *Environmental Science and Pollution Research*, (2016).

<sup>103</sup> Gray-Cosgrove et al., "The Challenges of Temporality to Depollution and Remediation," 3.

## **Remediation as Repair, Maintenance and Matters of Care**

Using an environment justice approach can situate mine remediation projects within a broader context of historical, political and economic inequality and can provide a way to frame action outside of the usual technical processes. Most importantly, an environmental justice approach recognizes and challenges the continuation of power structures that have disenfranchised certain groups of people throughout mining and remediation processes. Discard studies add to the EJ discussion by illuminating the important valuations, temporalities, and geographies of waste. In this sense, discard studies and EJ add a moral, ethical, and value based approach to technical approaches of remediation. However, such a framework is still premised on the idea of some ‘end point,’ where remediation is complete, the community has been engaged, justice issues have been addressed and some combination of economic, environmental and cultural value has been returned or added to the mine site. As mentioned earlier, what these approaches fail to address are the complex issues of perpetual care. Maintaining a remediated site alongside environmental justice is not a straightforward process; further degradation of land and relationships is always a possibility.

The terms ‘repair,’ ‘care and maintenance’ and ‘perpetual care’ are often used in the context of mine remediation.<sup>104</sup> Similar to literature on ecological restoration, recent literature on repair and maintenance questions the politics and power relations surrounding repair. Repairing is like restoring – there is an objective, an end goal, an agreed upon (or contested) optimum state, but the thing being repaired or restored will

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<sup>104</sup> Kuyek, “The Theory and Practice of Perpetual Care of Contaminated Sites;” Kempton et al. “Policy Guidance for Identifying and Effectively Managing Perpetual Environmental Impacts from New Hardrock Mines.”

never be exactly as it was. To *repair* is “to mend, to put back in order.”<sup>105</sup> Repair is related to the word *reparation*, which is used within the context of reconciliation and compensation, meaning the “compensation for war damaged owed by the aggressor.”<sup>106</sup> According to Houston and Jackson, repair studies have brought to light broader questions about “how we live with socio-technical systems, drawing attention to larger processes of valuation, breakdown, and wasting. Through these processes, the materiality of technologies becomes visible in new ways... prompting a wide range of social and environmental justice concerns.”<sup>107</sup> These ideas present repair as an intrinsically ethical activity. In this sense, repair, restoration and reconciliation are brought together as environmental destruction is seen as an injustice, responsible parties are held to account, and reparative mechanisms are put in place through both material and social repair of the land, and relationships. Spelman echoes these ideas of reconciliation and redemption stating that,

A repair approach can “enrich our understanding of the range of possibilities before us as we consider what to do, or to refrain from doing, in the face of ecological damage... From apologies and other informal attempts at patching

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<sup>105</sup> Online Etymology Dictionary, “Repair,” accessed Nov., 2016,

[http://www.etymonline.com/index.php?allowed\\_in\\_frame=0&search=repair](http://www.etymonline.com/index.php?allowed_in_frame=0&search=repair)

<sup>106</sup> Online Etymology Dictionary, “Repair,” accessed Nov., 2016,

[http://www.etymonline.com/index.php?allowed\\_in\\_frame=0&search=repair](http://www.etymonline.com/index.php?allowed_in_frame=0&search=repair)

<sup>107</sup> Lara Houston and Steven J. Jackson, “Caring for the “Next Billion Mobile Handsets: Opening Propriety Closures Through the Work of Repair,” (Anne Arbour, MI: The International Conference on Information and Communication Technologies and Development, June 3-6, 2016).

<sup>107</sup> Donna Haraway, “When species meet: Staying with the trouble,” *Environment and Planning D: Society and Space* 28, no. 1 (2010): 53-55.

<sup>107</sup> Sebastián Ureta, “Normalizing Transantiago: On the Challenges (and Limits) of Repairing Infrastructures,” *Social Studies of Science* 44, no. 3 (2014): 368–92.

<sup>107</sup> Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada, *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (Nov., 2013).

things up, to law courts, conflict mediation, and truth and reconciliation commissions, we try to reweave what we revealingly call the social fabric.<sup>108</sup>

A repair approach offers ongoing opportunities for creativity and adaptation throughout remediation processes and the perpetual care of mine sites.

However, as Ureta points out, repair can also be seen as a normalization process: “understood as normalization, repair practices can be seen not only as contributing to the long-term survival of a system, but also as a key strategy for the maintenance of power.”<sup>109</sup> Graham and Thrift suggest that processes of repair represent ways order is maintained in our environment, “emphasizing how maintenance and repair are moments of learning and of politics, as values and orders are being negotiated and re-made in and through restoration and reproduction.”<sup>110</sup> In many cases the aim of repair is to maintain the power of ‘experts’ or those in charge of such systems. Problems that arise are dealt with by reinforcing the rules of these experts even if mistakes in the past have been caused by this ‘expert knowledge.’<sup>111</sup>

Repair and maintenance processes, just like remediation and restoration, are not always inherently good.<sup>112</sup> As Jackson states, “repair is not always heroic or directed towards noble ends, and may function as much in defence as in resistance to anti-

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<sup>108</sup> Elizabeth V. Spelman, “Embracing and Resisting the Restorative Impulse,” in *Healing Natures Repairing Relationships: New Perspectives on Restoring Ecological Spaces and Consciousness*, ed. Roberts L. France (Sheffield VT: Green Frigate Books, 2008): 127-128.

<sup>109</sup> Ureta, “Normalizing Transantiago: On the Challenges (and Limits) of Repairing Infrastructures.”

<sup>110</sup> Stephan Graham and Nigel Thrift, “Out of Order: Understanding Repair and Maintenance,” *Theory, Culture and Society* 24, no. 3 (2007): 1-25, taken from Lara Houston and Steven J. Jackson, “Caring for the “Next Billion Mobile Handsets: Opening Propriety Closures Through the Work of Repair,” 3.

<sup>111</sup> C. J. Henke, “The mechanics of workplace order: toward a sociology of repair,” *Berkeley Journal of Sociology* 44 (2000): 57; Jessica Barnes, “States of Maintenance: Power, Politics and Egypt’s Irrigation Infrastructure,” *Environment and Planning D Society and Space* 35, no. 1 (2016): 1-19.

<sup>112</sup> Jessica Barnes, “States of Maintenance: Power, Politics and Egypt’s Irrigation Infrastructure.”

democratic and anti-humanist projects.”<sup>113</sup> Barnes builds on this, stating that, “the purpose of maintenance may be not so much about the defective object as about the social and political relationships in which that object is embedded.”<sup>114</sup> The aim of repair as normalization is the maintenance of power, which does not necessarily coincide with the improvement or restoration of degraded landscapes and communities.<sup>115</sup> However, repair can also be creative, political and spatial; what gets repaired, what doesn’t, who are we repairing for and how can repair highlight, damage or erase important histories.<sup>116</sup> If normalizing powers are critiqued, repair offers opportunities for creative innovation alongside a remembrance and recognition of the past – a balance of historical fidelity and innovation in an ongoing process of repair.

According to Ureta, failures, such as the abandonment of a mine, make infrastructures visible; “they open a black box of power to possible questions and/transformations by actors who might feel disenfranchised from it.”<sup>117</sup> Mine failure, closure and abandonment reveal power structures and normalizations that can be questioned and critiqued throughout the processes of remediation, restoration or repair. Therefore, rethinking remediation requires an investigation of how systems of degradation are normalized in mining practice and how these systems might be changed through remediation processes in order to ensure social betterment. Using concepts of repair, remediation can be reframed as an ongoing, long-term process. Combining the

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<sup>113</sup> Steven Jackson, “Rethinking Repair,” in *Media Technologies: Essays on Communication, Materiality, and Society*, (ed.) T. Gillespie, P.J. Boczkowski, and K. Foot (Cambridge, Mass: The MIT Press, 2014): 233.

<sup>114</sup> Jessica Barnes, “States of Maintenance: Power, Politics and Egypt’s Irrigation Infrastructure.”

<sup>115</sup> Ureta, “Normalizing Transantiago.”

<sup>116</sup> Josh Lepawsky, Max Liboiron, Arn Keeling and Charles Mather, “Repair-scapes,” *continent* 6, no. 1 (2017): 60.

<sup>117</sup> Ureta, “Normalizing Transantiago.”

material foundations of remediation, the moral and ethical foundations of ecological restoration within a theoretical framework of environmental justice and discard studies contextualizes the complexities of toxic mine sites. Repair, while recognizing the problem of normalization, points to a remediation approach that is based on the ongoing process of maintenance, adaptation and creativity. In combination these approaches to remediation point to something that Ureta calls going *beyond repair*,<sup>118</sup> or *beyond remediation*, towards ‘matters of care.’

If we are to go *beyond repair*, as Ureta suggests, we must approach remediation with a cautious and experimental approach. From the outset, remediation planning should outline the limits of expert knowledge and emphasize the need to experiment and adjust.<sup>119</sup> What Ureta terms ‘anti-programs’ or opposition should be framed not as “components to be disciplined, but as valuable signals about the shortcomings of the available scripts.”<sup>120</sup> In other words, disagreement or community opposition should not be seen as something that needs to be managed. It is not simply a matter of educating the public on the technical aspects of mining and remediation. This approach reinforces the authority of scientific knowledge and power structures throughout the mine lifecycle. Rather, being transparent about the limits of expert knowledge and embracing dialogue and the need to experiment and adjust has the potential to result in much more dynamic processes, in which the community is included and supported.

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<sup>118</sup> Ureta, “Normalizing Transantiago.”

<sup>119</sup> Houston and Jackson, “Caring for the “Next Billion Mobile Handsets: Opening Propriety Closures Through the Work of Repair.”

<sup>120</sup> Ureta, Sebastián. “Normalizing Transantiago.”



Terms such as stewardship, caretaker, and perpetual care invoke ideas of concern, care and even love for the environment and the social relations that sustain a healthy ecosystem: "Stewardship sidesteps the notion of specific goals to focus on the idea of a caretaker that is not an owner or dominator."<sup>121</sup> In this sense, Ureta argues, contamination and waste management become 'matters of concern' and 'matters of care' for the communities involved. Referencing Latour, Puig de la Bellacasa states that 'matters of concern' replace 'interests': "interests are something that the inheritors of agonistic modern politics have learned to approach suspiciously – or that we are supposed to jealously preserve when they are our 'own' interests. Concerns, in turn, call upon our ability to respect each other's issues, if we are to build a common world."<sup>122</sup> Framing contamination as 'matters of concern' help to avoid what Whitehead called a 'bifurcation of nature,' which separates feelings and meaning from fact.<sup>123</sup> Care builds on this notion of concern; care involves a notion of doing and intervening based on these concerns.

According to Puig de la Bellacasa the difference between concern and care is illuminated by comparing these two phrases: "I am concerned" and "I care." The first implies worry and attentiveness to an issue as well as recognizing the effects of an issue. "I care" on the other hand adds a sense of attachment, commitment and responsibility; "to care more strongly directs us to a notion of material doing."<sup>124</sup> The sense of attachment, commitment and responsibility means that to effectively care for a thing, we cannot cut

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<sup>121</sup> Rohwer and Marris, "Renaming Restoration."

<sup>122</sup> Maria Puig de la Bellacasa, "Matters of Care in Technoscience: Assembling Neglected Things," *Social Studies of Science* 41, no. 1 (2011): 88.

<sup>123</sup> A.N. Whitehead, *Concept of Nature* (Cambridge, Mass: Cambridge University Press, 1920); María Puig de la Bellacasa, "'Nothing Comes without Its World': Thinking with Care," *Sociological Review* 60, no. 2 (2012): 197–216; 88.

<sup>124</sup> Puig de la Bellacasa, "Matters of Care in Technoscience: Assembling Neglected Things," 90.

off those with whom we disagree: “To engage properly with the *becoming of a thing*, we need to count all the concerns attached to it, all those who care for it.”<sup>125</sup> The *becoming of a mine* relates both to the creation and running of the mine and the *becoming* of the mine as a site of remediation. In all stages of mining there are different concerns and different ways to care for these concerns. Those who work for or live with the mine must take all the concerns and mechanisms of care into equal consideration. Care is an “active practice of monitoring and intervening in a system in order to sustain the system itself and its wider relations over time.”<sup>126</sup> In this way, care can be mobilized to “serve as a gathering purpose: to hold together a thing.”<sup>127</sup> Care is a process of continually redefining relations in better ways.

Typically, the aim of waste management is a technologically based, top-down program that results in the containment of waste or disposal of it elsewhere. Waste is often presented as an apolitical issue, creating the “illusion that solutions to all problems are to be found in a more determined application of rationally organized expertise encapsulated in management theory and practice.”<sup>128</sup> Such actions eliminate waste as a “matter of concern” for the community, since they have no control. According to Ureta, care, on the other hand, is based on everyday practices and the expectation of failure; “it proposes temporary and experimental ways to involve all the concerned parties in the search for alternative ways to live with our waste, in material, ethical and political

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<sup>125</sup> Ibid.

<sup>126</sup> Houston and Jackson, “Caring for the “Next Billion Mobile Handsets: Opening Propriety Closures Through the Work of Repair,” 3.

<sup>127</sup> Puig de la Bellacasa, “Matters of Care in Technoscience: Assembling Neglected Things,” 90.

<sup>128</sup> Dean Bavington, *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse*. (Vancouver: UBC Press, 2011); Sebastian Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine,” *Environment and Planning A* 48, no. 8 (2016): 1532–48.

terms.”<sup>129</sup> Ureta seeks to change this focus and calls for a need to consider a *parallel* set of practices. Using Puig de la Bellacasa’s concept of ‘matters of care,’ Ureta outlines an alternative approach to studying the management of mine waste at the El Teniente Mine in Chile, where a long canal carrying tailings from the mine, through a community, to the tailings pond must be managed and maintained. He acknowledges the importance of technology, science and management based approaches, but presents care as a parallel way to manage and live with waste.

Building on the work of Mol et al., Puig de la Bellacasa, Martin et al., and Murphy, Ureta outlines three approaches to care that are important in caring for waste: care as *tinkering*, care as a form of ‘*affective entanglement*’ and care as *a particular kind of power*. First, Mol characterizes care as “persistent tinkering in a world full of complex ambivalence and shifting tensions.”<sup>130</sup> Care as tinkering is always experimental and tentative, reflexive of its own presence and limits; “nothing is taken to be entirely fixed or entirely fluid... technologies, habits, hopes, everything... may have to be adjusted.”<sup>131</sup> Care as tinkering shines more light on the importance of the day-to-day maintenance of the infrastructure and communities, through which waste is produced, managed, stored and maintained long-term. Something will always go wrong, and continual tinkering and experimentation is needed. This not only applies to material fixes, but also to what Henke

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<sup>129</sup> Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>130</sup> Annemarie Mol, Ingunn Moser and Jeanette Pols, “Care in Practice: On Normativity, Concepts and Boundaries,” *Technoscienza Italian Journal of Science and Technology Studies* 2, no. 1 (2010): 73-86.

<sup>131</sup> Annemarie Mol, *The Logic of Care: Health and the Problem of Patient Choice* (London: Routledge, 2008).

calls “social repair,”<sup>132</sup> or the tinkering with relationships that are shaped by waste, waste management, and remediation.

Care as an ‘affective entanglement’ is an “ethical commitment to take into account all the entities involved in industrial solid waste, even the ones we dislike or are opposed to.”<sup>133</sup> Caring for waste means living with it and all the things, human or non-human, associated with that waste. Waste is not going to simply disappear through the processes of remediation and restoration. Caring for waste “requires knowledge and curiosity regarding the need of an ‘other’ – human or not, and these become possible through relating, through refusing objectification.”<sup>134</sup> As Ureta suggests, the management of waste must take into account all participants, from disempowered communities to the waste itself. Such an approach fits within a combined conceptual framework of environmental justice and discard studies.

Similar to remediation and repair, care is not necessarily good; caring is “political, messy and dirty.”<sup>135</sup> In this way, care can manifest as particular kinds of power; it cherishes some things while excluding others.<sup>136</sup> Care, as Murphy and Martin et al. argue, can also become apolitical when governments or industries ‘care for’ communities, but communities lose the political ability to care for themselves.<sup>137</sup> Similar to the continuation

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<sup>132</sup> C. Henke, “The mechanics of workplace order: Towards a sociology of repair.”

<sup>133</sup> Myra Hird, “Waste, Landfills and an Environmental Ethic of Vulnerability,” *Ethics and the Environment* 18, no. 1 (2013): 1085-6633; Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>134</sup> Puig de la Bellacasa, “Matters of Care in Technoscience: Assembling Neglected Things,” 98.

<sup>135</sup> Puig de la Bellacasa, “‘Nothing Comes without Its World’: Thinking with Care,” *Sociological Review* 60, no. 2 (2012): 197–216; Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>136</sup> Aryn Martin, Natasha Myers, and Ana Viseu, “The Politics of Care in Technoscience,” *Social Studies of Science* 45, no. 5 (2015): 627; Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>137</sup> Martin et al. “The Politics of Care in Technoscience”; Michelle Murphy, “Unsettling Care: Troubling Transnational Itineraries of Care in Feminist Health Practices,” *Social Studies of Science* 45, no. 5 (2015): 717–37; see also Ottinger, *Redefining Expertise*.

and normalization of marginalizing power structures through processes of remediation, restoration and repair, Murphy warns that: “Care is not necessarily the route to emancipated science and alternative knowledge-making without critically examining the ways positive feelings, sympathy and other forms of attachment can work with and through the grain of hegemonic structures, rather than against them.”<sup>138</sup> Murphy argues that we must continually ‘unsettle’ practices of care. Just as care can be done through tinkering, care practices must also be tinkered with. The management of waste must be carried out in a reflexive fashion so that it avoids “enacting antipolitics in the name of care”<sup>139</sup> and so that practices to care for waste are continually remade in better ways.<sup>140</sup>

Using these three concepts of care, Ureta highlights a particular example of care that is important to everyone working at the El Teniente Mine: care for the communities surrounding the tailings canal. This is based on the concept of simply being a ‘good neighbour.’<sup>141</sup> Locals who have worked at the mine for years are chosen to deal with community relations, which Ureta identifies as a certain kind of politics of care. In this sense, maintenance is always material and social.<sup>142</sup> Ureta emphasizes that the relationships of these Community Relations personnel with the surrounding community members is largely informal. They have continual contact as employees walk around the mine site and tailings canal for maintenance, stopping to chat with those who live close by. This kind of interaction shows care as ‘affective entanglement.’ In addition, while

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<sup>138</sup> Murphy, “Unsettling Care: Troubling Transnational Itineraries of Care in Feminist Health Practices.”

<sup>139</sup> Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>140</sup> Murphy, “Unsettling Care: Troubling Transnational Itineraries of Care in Feminist Health Practices.”

<sup>141</sup> Douglas Kenney, Miriam Stohs, Jessica Chavez, Anne Fitzgerald, and Teresa Erickson, “Evaluating the Use of Good Neighbor Agreements for Environmental and Community Protection” (Boulder, Colorado, 2004).

<sup>142</sup> Henke, “The Mechanics of Workplace Order: Towards a Sociology of Repair.”

these employees are chatting with the locals, they are continually checking the physical structure of the canal. On these daily trips, the employees are tinkering, adjusting and maintaining both the social and physical relations surrounding the tailings canal. Ureta quotes one community member as saying, “I’m glad to help them and glad that they sometimes help me to take care [of my property], help me to take care.”<sup>143</sup> Care gives attention to those who could be harmed, whose voices are not often heard, helping to mitigate and prevent environmental injustices. This kind of care is all about reciprocal relationships.

### **Conclusions: Remediation as Relationships and Reconciliation**

According to Storm, landscape restoration or remediation can be seen as a scabbing process, an intermediate stage where hierarchies are negotiated, values are defined and perceptions of waste and future land uses are discussed. Storm writes that, “To heal a mental or physical wound into a scar that one can live with is to recognize key signs of difficult or ambiguous pasts and to point towards possible reconciliation.”<sup>144</sup>

While using this metaphor she outlines the intermediate stage of scabbing:

Scabbing signifies a situation of undefined shapes and unsettled meanings, a liminal condition that is decisive for understanding the people and the places... while the scar often remains ambiguous, the scab is even more open to interpretation in a multitude of ways; here struggles over hierarchies of significance become particularly overt and discernible. Some wounds remain as scabs for a long time, because there is no room for healing and recovery.<sup>145</sup>

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<sup>143</sup> Ureta, “Caring for Waste: Handling Tailings in a Chilean Copper Mine.”

<sup>144</sup> Storm, A., *Post-Industrial Landscape Scars*.

<sup>145</sup> Storm, A., *Post-Industrial Landscape Scars*, 2.

Such a process requires constant tinkering, experimentation and discussion about knowledge, research, technology, relationships, history, political power and communication. This scabbing process also implies input from all stakeholder groups and the continual negotiation of morals, values and objectives.<sup>146</sup> Through ongoing care, tinkering, experimentation and communication, the past political structures that led to degradation and marginalization are brought to light. Storm sees the scarring, like repair, as a creative opportunity for how the space will be remembered, valued and cared for in the future.<sup>147</sup> In a similar way, remediation presents an opportunity for the negotiation about the history of the site, and a creative, ongoing discussion about the future; possibilities can emerge from the wounds and the wreckage.

When mines ‘die’ they do not simply disappear; they cannot be buried and forgotten about.<sup>148</sup> Remediation is a part of the mine lifecycle and therefore cannot be examined as separate from the history of the mine itself. The remediation process is a continuation of the mining process; it alters the landscape, society and economy and can be both dangerous and beneficial for surrounding communities. In remediation, as it is connected to mining, there are many different definitions and valuation systems involved. There are many stakeholders with a variety of perspectives, realities, values and practices. There are multiple levels of government, consulting companies, mining and construction companies, indigenous groups, municipal organizations and environmental organizations. In addition, it is difficult to define and manage the temporality and geography of toxic waste. Remediation is shaped not only by the complex history of the mine, but also by the

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<sup>146</sup> Rohwer and Marris, “Renaming Restoration.”

<sup>147</sup> Storm, *Post-Industrial Landscape Scars*.

<sup>148</sup> Worrall, et al., “Towards a Sustainability Criteria and Indicators Framework for Legacy Mine Land.”

many different groups articulating their values, how these values are ranked hierarchically, and how waste transforms over time and space.<sup>149</sup>

Today, remediation projects are often associated with terms such as liability and risk management, where liability and risk can be measured, quantified and dealt with through technical management plans. However, socially, it is a messy, tangled process that could be seen more as a healing of land and relationships. Remediation, restoration and reconciliation present an opportunity for a negotiation about the history of the site, and a creative discussion about the future:

As an act-centered ethical perspective, restoration-as-redemption thus seeks to reverse concerns of moral detachment and ethical indifference - and in so doing, counter ecological injustice. In taking forward an ethic of care (through engagement and participation), redemption narratives break down and deconstruct the dualism between society and nature - a preserve of environmental ethics of philosophy - to promote responsibility and mutuality.<sup>150</sup>

Care as an analytic lens opens up ways of reimagining remediation practices. Following the three components of care outlined by Ureta, in order to ensure community involvement in waste management and long term care, remediation projects must always be tinkered with and adapted; remediation must take into account all actors and stakeholders, including the waste itself; and remediation must always be recognized as a political process. Attending to care in remediation contexts can “help us locate immediate forms of technical work within wider moral and political orderings;”<sup>151</sup> Rethinking

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<sup>149</sup> Joan Martinez-Alier, “Mining conflicts, environmental justice and valuation,” *Journal of Hazardous Materials* 86 (2001): 153-170.

<sup>150</sup> Smith, “On the ‘Emotionality’ of Environmental Restoration,” 298.

<sup>151</sup> Houston, and Jackson, “Caring for the “Next Billion Mobile Handsets: Opening Propriety Closures Through the Work of Repair.”



remediation places these technical practices within a framework of environmental justice and discard studies as an ongoing, perpetual *process* of community concern and care.

## CHAPTER 3

### CREATING THE GIANT MINE MONSTER

*“Regardless of who you are, Giant Mine weaves very much into the fabric of what makes this community this community, whether it’s positive or negative... it has definitely shaped the city and the territory in many ways.”*

*– Lisa Dyer, Government of the Northwest Territories*

#### **Introduction**

In order to better understand the underlying relationships and environmental injustices that shape the Giant Mine Remediation Project today, it is first important to outline the decisions, events and policies that created the Giant Mine Monster. Moving from the late 1940s through the 1990s, I briefly outline a few of the many incidents, flashpoints and experiences that shaped the definitions, values and perceptions of remediation at the Giant Mine. Through these histories I hope to highlight the ways in which the remediation project at the Giant Mine cannot be detached from its history and politics as a mining operation. While bringing jobs, wealth and a sense of community to some, others’ experiences led to a lack of trust in government and industry, resulting in conflicts and protests that continue to shape the remediation process. Without acknowledging and incorporating the historical relationships that the Giant Mine created and imposed on local residents, the Giant Mine Remediation Project risks perpetuating the political systems that broke trust and marginalized First Nations.<sup>1</sup>

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<sup>1</sup> Lindsey Dillon, “Race, Waste, and Space: Brownfield Redevelopment and Environmental Justice at the Hunters Point Shipyard,” *Antipode* 46, no. 5 (2014): 1205–21.

## **1940s-1960s: Setting a precedent of pollution and secrecy at Giant Mine**

Northern industrial development in the first half of the twentieth century was characterized by limited institutional and government controls.<sup>2</sup> Rather than regulating pollution and development, the federal government focused on promoting industry, development, settlement and expansion in the north.<sup>3</sup> This expansion occurred within a post war context, when the federal government was eager to create jobs and develop industry. In the Yellowknife area, such expansion occurred after the signing of Treaties and the implementation of the Indian Act, which effectively marginalized First Nations communities from economic and industrial developments on their traditional lands.<sup>4</sup> It is within this colonial, industrial context that Giant began operations in 1948. The Canadian government's push for Northern industrialization created a relatively isolated, volatile northern mining context, resulting in a "social and economic dislocation that continues to disproportionately impact northern Native communities."<sup>5</sup>

The specific geographic and geological details of the Yellowknife area played a crucial role in the creation and management of waste at Giant. The local bedrock is comprised of arsenopyrite, a mineral containing iron, sulphur and arsenic. In this situation, gold in the rock is bonded within the sulphide ore and needs to be crushed then

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<sup>2</sup> Liza Piper, *The Industrial Transformation of Subarctic Canada* (Vancouver: UBC Press, 2008).

<sup>3</sup> Anne Dance, "Northern Reclamation in Canada: Contemporary Policy and Practice for New and Legacy Mines," *The Northern Review* 41 (2015): 41-80. ; Liza Piper. *The Industrial Transformation of Subarctic Canada*.

<sup>4</sup> Rene Fumoleau, *As Long as This Land Shall Last: A History of Treaty 8 and 11, 1870-1939* (Calgary: University of Calgary Press, 2004)

<sup>5</sup> Arn Keeling and John Sandlos, "Introduction: The Complex Legacy of Mining in Northern Canada," in *Mining and Communities in Northern Canada: History, Politics and Memory*, ed. Arn Keeling and John Sandlos (Calgary: University of Calgary, 2015), 4.

roasted before being separated from the waste rock using cyanidation processes.<sup>6</sup> At Giant, this process created an arsenic gas, which, when combined with oxygen and cooled, formed arsenic trioxide dust, a highly toxic form of arsenic that is odourless and tasteless.<sup>7</sup> For the first three years of operation, 22 000 lbs. of arsenic trioxide dust was sent up the mine's smokestack daily, which then dispersed across the local environment, collecting in lake sediments and pockets of soil between rocky outcrops.<sup>8</sup>

Soon after operations began, the potentially negative health effects of arsenic pollution became evident. Initially, the mining company and government thought that tailings dams and a tall roaster stack would be sufficient to eliminate health risks to the nearby communities. However, despite dams, tailings waste continued to flow into Baker Creek and Great Slave Lake, resulting in water pollution problems at both the Con and Giant mines.<sup>9</sup> Arsenic trioxide dust from the smokestack collected in sediments, soils and on top of snow, rather than being dispersed or 'flushed out' by water flows. In the late

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<sup>6</sup> For more details on the crushing and cyanidation processes see: Ryan Silke, *The Operational History of Mines in the Northwest Territories, Canada* (Yellowknife: Northwest Territories Geoscience Office, 2009).

<sup>7</sup> Silke, *The Operational History of Mines in the Northwest Territories*.

<sup>8</sup> For early emissions data and the unregulated nature of emissions from 1949-51, see A. J. de Villiers and P.M. Baker, *An Investigation of the Health Status of Inhabitants of Yellowknife, Northwest Territories* (Ottawa: Occupational Health Division, Environmental Health Directorate, Department of Health and Welfare, 1970); There are also details about emissions data in correspondence from Dr. O. Schaefer, Northern Medical Research Unit to the Regional Director, Northern Region, National Health and Welfare (RG 29, vol. 2977, file 851-5-2, pt. 1, Library and Archives Canada (LAC): November 1971).

<sup>9</sup> John Sandlos and Arn Keeling, *Giant Mine Historical Summary* (August 8, 2012), [http://www.reviewboard.ca/upload/project\\_document/ea0809-001\\_giant\\_mine\\_history\\_summary.pdf](http://www.reviewboard.ca/upload/project_document/ea0809-001_giant_mine_history_summary.pdf). A comprehensive overview of all these issues, including the prevalence of tailings spills, is contained in Villiers and Baker, *An Investigation of the Health Status of Inhabitants of Yellowknife*, and a report authored by the Canadian Public Health Association (CPHA), *Task Force on Arsenic – Final Report, Yellowknife Northwest Territories* (Ottawa: CPHA, 1977). The toxicity of these tailings overflows was documented in a federal Environmental Protection Service report: R.R. Wallace, M.J. Hardin and R.H. Weir, "Toxic Properties and Chemical Characteristics of Mining Effluents in the Northwest Territories," EPS Report no. EPS-5-NW-75-4 (Department of the Environment, February 1975).

1940s there were two recorded cases of arsenic poisoning,<sup>10</sup> at which point two local doctors, Dr. Kingsley Kay and Dr. Oliver Stanton, expressed concerns about arsenic poisoning to government officials.<sup>11</sup> The government and company did nothing until the death of a Dene child in April 1951 due to acute arsenic poisoning from drinking contaminated snowmelt water.<sup>12</sup> At this time, the company was pressured by the federal government to investigate methods of pollution control.<sup>13</sup> An electrostatic precipitator, which captured the arsenic trioxide dust before it entered the atmosphere, was not installed until six months after the death of the Dene child.<sup>14</sup>

The electrostatic precipitator did not entirely plug the flow of arsenic into the surrounding environment and created the new problem of having to manage the arsenic that was being collected.<sup>15</sup> In the early 1950s, federal bureaucrats and mine managers discussed several options for managing the captured arsenic, including moving the arsenic waste to another site, sealing it in concrete containers, or refining it in such a way to make

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<sup>10</sup> In 1949 two workers at Akaitcho Mine receive treatment in hospital due to drinking contaminated snowmelt: see A. J. de Villiers and P.M. Baker, *An Investigation of the Health Status of Inhabitants of Yellowknife*; and Canadian Public Health Association (CPHA), *Task Force on Arsenic – Final Report, Yellowknife Northwest Territories* (Ottawa: CPHA, 1977).

<sup>11</sup> John Sandlos and Arn Keeling, *Giant Mine: Historical Summary*. There is key information on the first health survey and monitoring effort by Dr. Kingsley Kay in RG 85, vol. 40, file 139-7, pt. 1, LAC.

<sup>12</sup> The death of this Dene child was discussed at a meeting among government officials and Giant Mine managers held in Ottawa June 1st, 1951. The minutes are contained in the file RG 29, vol. 2977, file 851-5-2, pt. 1, Library and Archives Canada (LAC). The Yellowknives Dene First Nations say that there were other deaths and illness of both humans and animals throughout these decades. However, this was never officially confirmed or recorded by government regulators or the mining company.

<sup>13</sup> John Sandlos and Arn Keeling, “The Giant Mine’s Long Shadow: Arsenic Pollution and Native People in Yellowknife, Northwest Territories,” in *Mining North America: An Environmental History Since 1522*, ed. John R. McNeill and George Vrtis (Oakland, California: California University Press, 2017), 280-312.

<sup>14</sup> Details on the pollution control equipment at Con Mine and Giant Mine were found in W.H. Frost, Senior Medical Advisor, Medical Services Branch, National Health and Welfare, “Arsenic – Yellowknife,” 28 October 1970, RG 29, vol. 2977, file 851-5-2, pt. 1, LAC.

<sup>15</sup> Matthew Mcclearn, “Mining: Shit Happens but You Move on,” *Canadian Business* (2009).

it chemically neutral.<sup>16</sup> Similar options would again turn up in arsenic management studies and remediation options throughout the 1980s, 90s and 2000s.<sup>17</sup> In a letter dated July 21, 1950, the Department of National Health and Welfare stated that it regarded the use of concrete vats on the surface as the safest method of storage, however it did not want to cause the company unnecessary expense and was open to other options.<sup>18</sup> Through experimentation and discussion with government regulators, the mine company determined that an underground storage method, using bunkers would be the most stable and cost effective, and that permafrost would help to stop water flow through the waste bunkers.<sup>19</sup> Letters also outlined the government's economic priorities and a certain willingness to bury the arsenic, contain it with permafrost, and forget about it.<sup>20</sup>

While the electrostatic precipitator reduced the amount of arsenic going up the Giant Mine roaster stack, lingering concerns about arsenic contamination prompted a survey by the federal Department of National Health and Welfare in 1955. Entitled, *The Arsenic Problem at Yellowknife: A Report of Environmental and Medical Conditions*, this survey included both environmental and medical assessments and it documented continued illnesses of workers and the deaths of cows and pets, despite pollution

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<sup>16</sup> Letter from Giant Yellowknife Gold Mines Limited to Mr. G.E.B. Sinclair, Director, Northern Administration and Lands Branch, Department of Resources and Development, "Underground storage of Dry Arsenic-Trioxide" (February 24, 1951); Letter from Dr. Oliver L. Stanton to Mr. G.E.B. Sinclair Director, Northern Administration and Lands Branch, Department of Resources and Development, "RE: Arsenic disposal Giant Yellowknife Mines" (March 2, 1951).

<sup>17</sup> SRK Consulting Ltd., *Final Report: Arsenic Trioxide Management Alternatives: Giant Mine*, prepared for Department of Indian Affairs and Northern Development (December 2002).

<sup>18</sup> Indian and Northern Affairs Canada and the Government of the Northwest Territories, *Giant Mine Remediation Developer's Assessment Report*, submitted to the Mackenzie Valley Environmental Impact Review Board as a part of the Giant Mine Remediation Project Environmental Assessment (EA0809-001, October 2010).

<sup>19</sup> Letter from Giant Yellowknife Gold Mines Limited to Mr. G.E.B. Sinclair, "Underground storage of Dry Arsenic-Trioxide."

<sup>20</sup> Indian and Northern Affairs Canada and the Government of the Northwest Territories, *Giant Mine Remediation Developer's Assessment Report*.

controls.<sup>21</sup> In this survey, The Department of National Health and Welfare recommended that roasting at Giant Mine should be stopped until more adequate collection procedures could be installed, but this suggestion was blocked by the Northwest Territories Council and instead, focus was placed on installing additional pollution controls, while the mine continued to operate.<sup>22</sup> In 1954 a second electrostatic precipitator was installed, collecting about 60 percent of the arsenic produced and reducing the dispersal of arsenic to 7250 lbs. per day.<sup>23</sup> In 1958 a baghouse filtering system was installed in addition to the electrostatic precipitators, which reduced arsenic emissions to about 694 lbs. per day.<sup>24</sup> The increased effectiveness of arsenic collection and the use of underground storage gave the impression that contamination was no longer a problem.<sup>25</sup>

This impression didn't last long. Increased public concern in the early 1960s led to several tests and studies on arsenic pollution in the Yellowknife area.<sup>26</sup> Instead of imposing pollution control regulations on the mining company, studies done throughout

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<sup>21</sup> Occupational Health Division, Department of National Health and Welfare, *The Arsenic Problem at Yellowknife: A Report of Environmental and Medical Conditions* (NWT Archives: September 1955).

<sup>22</sup> Kevin O'Reilly, "Liability, legacy, and perpetual care: Government ownership and management of the Giant mine, 1999-2015," in *Mining and Communities in Northern Canada: History, Politics and Memory*, *Mining and Communities in Northern Canada: History, Politics and Memory* ed. Arn Keeling and John Sandlos, (Calgary, Alberta: University of Calgary Press, 2015).

<sup>23</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*; Devilliers, A.J. and Baker, P.M., *An Investigation of the Health Status of Inhabitants of Yellowknife, NWT*; Reference to the second ESP and its impact on emissions was found in D.A. Gemmill, "Yellowknife Environmental Survey: Summary Report," (Ottawa: Environmental Protection Service, Department of the Environment, 1975), RG 29, vol. 2977, file 851-5-2, pt. 4, LAC.

<sup>24</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*; Devilliers, A.J. and Baker, P.M., *An Investigation of the Health Status of Inhabitants of Yellowknife, NWT*,

<sup>25</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*

<sup>26</sup> J.W. Grainge, *Water Pollution, Yellowknife Bay, Yellowknife, NWT* (Department of National Health and Welfare, 1963); J.W. Grainge, *Arsenic Survey of Yellowknife Bay* (Department of National Health and Welfare, 1967); W.K. Sharpe, *Arsenic Surveys of Yellowknife Bay and Turbidity Survey of Yellowknife River* (Department of National Health and Welfare, 1968).

the 1950s and 60s served only to “confirm the status quo of mining operations.”<sup>27</sup> While these studies did find elevated levels of arsenic in water sources and the surrounding environment, little action was taken besides warning residents to wash produce. There was little follow-up or communication of findings to the community regarding scientific health and environment studies. One health study done between 1967-1969 by the Department of National Health and Welfare was not publically released until 1971, causing people to suspect the government of secrecy and conspiracy.<sup>28</sup> Eventually, in 1969, the City’s water intake pipeline was moved to the mouth of the Yellowknife River, upstream from the Giant Mine. However, City water was not available in Dettah, the Dene community across the Bay from Yellowknife.<sup>29</sup>

Despite early evidence of pollution and negative health effects, the Department of National Health and Welfare and the mining company initially did little to warn locals or to prevent ongoing pollution. The lack of immediate action after the death of this Dene child illustrated the limited concern for the health and safety of First Nations who relied on local water sources and underscores the Yellowknives Dene First Nation’s feeling of mistrust towards the mining industry and regulatory agencies. Arguably, the Giant Mine Monster was created when the government and company ignored initial concerns from local physicians, setting a precedent that resulted in the death of the Dene boy and allowed the mining company to continue polluting. These early health incidents and a

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<sup>27</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*, 10.

<sup>28</sup> Devilliers, A.J. and Baker, P.M., *An Investigation of the Health Status of Inhabitants of Yellowknife*, taken from: Sandlos and Keeling, *Giant Mine: Historical Summary*, 11.

<sup>29</sup> The Department of Health and Welfare paid for this pipeline. Today, the federal government refuses to pay for the City of Yellowknife to have the pipeline replaced. The City of Yellowknife will have to either pay for the pipeline itself, or take water from Great Slave Lake. This is an ongoing point of contention between the City, the GMRPT and INAC. See City of Yellowknife, “Municipal Services Committee Report: Meeting Minutes” (June 27, 2016).



lack of government and company transparency created a monster of mistrust even before the arsenic trioxide was put underground. Concrete evidence of health effects are difficult to come by over the following decades, but throughout the 50s and 60s, there are continual oral references to negative health effects for humans and animals.<sup>30</sup> These environmental injustices have yet to be resolved for the Yellowknives Dene First Nations and Yellowknifers.

### **1970s-1980s: Increasing Environmental Awareness and Concern**

Throughout the 70s and 80s, North Americans became increasingly aware of the environmental, health and safety risks associated with mining waste.<sup>31</sup> In Canada, many mines that opened in the first half of the 20<sup>th</sup> century without strict environmental regulations began shutting down, and governments were forced to think of ways to handle

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<sup>30</sup> Several incidents are outlined in Sandlos and Keeling, *Giant Mine: Historical Summary*. There is a reference to arsenic related illness in an "indigent Indian" named Henry Lafferty in 1953 contained in a memo from P.E. Moore, Director of Indian Health Services, to L.I. Pugsley (Laboratory Services, November 1953), RG 85, vol. 40, file 139-7, pt. 1, LAC. Several oral interviews recall the death of domestic animals at the Bevan farm in the early 1940s due to water pollution from Con Mine. See Susan Jackson, *Yellowknife, NWT: An Illustrated History* (Sechelt, B.C: Nor'West Pub., 1990); Ronne Heming and Terry Foster, *Yellowknife Tales: Sixty Years of Stories from Yellowknife* (Yellowknife: Outcrop Limited, 2000) 97-98. In 1978 a doctor recalled treating several "middle-aged Indians" in 1957-58 for several arsenic-related skin conditions and anemia. The specific references to skin conditions such as keratosis, hyperpigmentation, and parenthesesias were found in a memo from Dr. O. Schaeffer to Dr. B. Wheatley, Environmental Contaminant Program, Medical Services Branch, Health and Welfare Canada (NWT Archives, May, 1 1978). Oral history recollections of deaths can be found in YKDFN Elders Advisory Council, *Weledeh Yellowknives Dene: A History* (Dettah: 1997). See also Fred Sangris, Isadore Tsetta, and Michelle Paper, Evidence, Parliamentary Hearings on Canadian Environmental Protection Act, 11 May, 1995 [http://www.parl.gc.ca/content/hoc/archives/committee/351/sust/evidence/122\\_95-05-11/sust122\\_blk-e.html#0.1.SUST122.000001.AA1040.A](http://www.parl.gc.ca/content/hoc/archives/committee/351/sust/evidence/122_95-05-11/sust122_blk-e.html#0.1.SUST122.000001.AA1040.A)

<sup>31</sup> Increasing influence of environmentalist scholarship such as Rachel Carson's *Silent Spring* Houghton Mifflin: U.S (1962); D.E. Hockley and L.C. Hockley, "Some Histories of Mine Closure, the Idea," *Mine Closure Conference*, (Vancouver: InfoMine Inc., 2015); The Bureau of Land Management, Forest Service, "Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines," (2007); John Wirth, *Smelter Smoke in North America* (Kansas: University of Kansas Press, 2000); Arn Keeling and John Sandlos, "Pollution, Local Activism, and the Politics of Development in the Canadian North," in "Environmental Knowledge, Environmental Politics," edited by Jonathan Clapperton and Liza Piper, *RCC Perspectives: Transformations in Environment and Society*, no. 4 (2016): 25-32.

these liabilities.<sup>32</sup> This increased focus on the clean up of contaminated sites followed the rise of environmentalism in the 1960s and 70s and the creation of environmental protection laws, water licensing bodies and other regulatory mechanisms across Canada.<sup>33</sup> In 1972, the Northern Inland Waters Act was introduced to govern the use of water in the Canadian Territories. This Act resulted in the creation of the Northwest Territories Land and Water Board, which regulated mining in the NWT through water licenses and provided opportunities for public hearings.<sup>34</sup> However, the Northern Inland Waters Act failed to define expectations or guidelines for closure, abandonment or restoration, making it more difficult for communities to hold companies to any kind of remediation standard.

Due to new regulations, the majority of scientific and regulatory research at Giant throughout the 70s and 80s focused on tailings containment and water management, with less attention given to the underground arsenic or potential mine closure strategies.<sup>35</sup>

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<sup>32</sup> Examples in Canada include Sydney, Sudbury, Britannia, Port Radium. In the late 90s and early 2000s, examples include Colomac Mine, Faro Mine, and Giant Mine. Major examples in the US include Superfund sites. The initiation of Superfund programs in the United States in the 1980s was a major turning point or the recognition and restoration of toxic sites on a large-scale, federal level. See David Brooks, *Restoring the Shining Waters: Superfund Success at Milltown, Montana*, (Oklahoma: University of Oklahoma Press, 2015).

<sup>33</sup> The Environmental Contaminants Act was introduced in 1975. See also: Dance, “Northern Reclamation in Canada,” Steve Roberts, Marcello Veiga, and Carlos Peiter, “Overview of Mine-Closure and Reclamation in the Americas Executive Summary,” Mine-closure and Reclamation Bibliographic Database Project for the International Development Research Center (Canada, October 2000); J.F. Castrilli, “Control of Toxic Chemicals in Canada: An Analysis of Law and Policy,” *Osgoode Hall Law Journal* 20, no. 2 (1982): 322-401.

<sup>34</sup> The Mackenzie Valley Pipeline Inquiry, or Berger Inquiry, beginning in 1974 set an important precedent for public hearings and community involvement in resource development in the North. See Carly Dokis, *Where the Rivers Meet: Pipelines, Participatory Resource Management and Aboriginal-State Relations in the Northwest Territories* (Vancouver: UBC Press, 2015).

<sup>35</sup> Water monitoring began in 1973 under the Water Management Section of the Department of Indian and Northern Affairs. See Ron Wallace, M. J. Hardin, *Chemical and Biological Characteristics of Seepages from Tailings Areas at Giant Mine Yellowknife Mines, Ltd., into Great Slave Lake, Northwest Territories in 1974* (Environment Canada, 1974); B. Berube, Frenette, M., Gilbert, C. Anctil, “Studies of Mine Waste Containment at Two Sites Near Yellowknife, NWT” (ALUR Report Number 72-73-32 1973); M. Roy, P.

Several studies produced throughout the 70s concluded that pollution had occurred and that there was a potential for water contamination through the tailings. One Environment Canada report on the mine waste seepage from the tailings ponds recommended that the tailings disposal system be upgraded, that all wastes be treated, that continual monitoring of the site be put in place, and finally that a study should be implemented to investigate the historical impact of emissions and effluent from the mine site on the surrounding environment.<sup>36</sup> While tailings dams were added and reinforced, little was done to follow up on these recommendations. The construction of a water treatment plant was delayed and the mining company did not receive any consequences for not completing it on time.<sup>37</sup> Throughout this period government responsibility for regulating spills and contamination continued to be uncertain and the NWT Land and Water Board continually forgave water license violations.<sup>38</sup> As many locals pointed out in public hearings,

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LaRochelle, and C. Anctil, "Stability of Dykes Embankments at Mining Sites in the Yellowknife Area" (ALUR Report Number 72-73-31, 1973).

<sup>36</sup> Ron Wallace, M. J. Hardin, *Chemical and Biological Characteristics of Seepages from Tailings Areas at Giant Mine*; Ron Wallace, M. J. Hardin, *Toxic Properties and Chemical Characteristics of Mining Effluents in the Northwest Territories*, (Environment Canada, February, 1975).

<sup>37</sup> Fisheries Act (1985), the Clean Air Act, the Ocean Dumping Act, the Canada Water Act, and the Canadian Environmental Protection Act (1988); The 1981 license required that a water treatment plant be implemented, see: Kevin O'Reilly, "Liability, legacy, and perpetual care: Government ownership and management of the Giant mine, 1999-2015," in *Mining and Communities in Northern Canada: History, Politics and Memory*, ed. Arn Keeling and John Sandlos, (Calgary, Alberta: University of Calgary Press, 2015).

<sup>38</sup> Northwest Territories Land and Water Board, "Public Hearing: Application for Water License Renewal by Giant Yellowknife Mines Limited," License No. N1L30043 (Yellowknife, NWT, January 27, 1981); Northwest Territories Land and Water Board, "Public Hearing on an Application by Giant Yellowknife Mines Ltd. Yellowknife Operations to Renew Water License N1L3-0043," (Yellowknife, NWT, November 27, 1985). See also compliance reports and spill reports from the 1980s: J. Redburn and A. MacDonald, "Report on the Compliance of Giant Yellowknife Mines Limited with Water License N1L3-0043," (NWT Land and Water Board Archives, Nov. 27, 1985).

governance over such failures, and assurance of financial security if something did go wrong, was continually lacking.<sup>39</sup>

In addition to the increased level of scientific scrutiny on water management, an important aspect of the Northern Inland Waters Act was the public hearing process for water licenses.<sup>40</sup> Despite a promise of transparency, such boards perpetuated colonial power structures and environmental injustices, allowing only certain types of questioning that catered to the mining company, the government and economic development.<sup>41</sup> In addition, these hearings tended to focus on tailings and water management. Community fears about the arsenic underground were continually overlooked, as the government and mine experts assured the community that the underground storage system was technically sound.

Testifying at the 1974-75 Water Board hearings, Jerry Sutton, the legal advisor for the Indian Brotherhood, an Indigenous rights advocacy organization, highlighted the issues of colonial power dynamics in government regulation in the North:

The record of the Mining Industry in Yellowknife patently demonstrates that government responsibility has been lacking. The fact that deaths have occurred shows not only irresponsibility, but frightening negligence on the part of the government. This becomes all the more serious when it is noted that one of the government agencies involved, The Department of Indian Affairs, has as its responsibility the welfare of the Indian people. This leads, in turn, to the question of the role of the Water Board. How can the Native people, or any interested party for that matter, expect any meaningful regulation of the Mining Industry in Yellowknife if the very government departments which are guilty of allowing pollution to occur in the past, make up the Water Board? As such, it is impossible to feel secure and confident that the Water Board would be that interested in

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<sup>39</sup> Northwest Territories Land and Water Board, "Public Hearing: Application for Water License Renewal by Giant Yellowknife Mines Limited," License No. N1L30043 (Yellowknife, NWT, January 27, 1981);

<sup>40</sup> This also occurred in the context of the Berger Inquiry public hearings, beginning in 1974: Thomas Berger, *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry* (Minister of Supply and Services Canada, 1977).

<sup>41</sup> Dokis, *Where the Rivers Meet*.

having a full and open inquiry.... What is the role of the Water Board? Is it to give licenses to pollute?<sup>42</sup>

This quote highlights ongoing public calls to limit the conflict of interest between government, regulators and industry, and to take responsibility for the wastes of industrial production and environmental injustices against local First Nations. Sutton also questioned the Board's own authority, saying, "under what authority was Giant Mine first established and what authority gave them the right to use water in the manner that they have been doing since 1948."<sup>43</sup> The Board deemed this question irrelevant to the hearing process.

The 1975 hearings also highlighted the conflict of different knowledges and perspectives regarding the Giant Mine. Tapwe Chretien, a Yellowknife community member critiqued the companies presentations and studies, saying that there were no human values involved: "They're just figures, numbers, maps, you show maps... This is a moral issue we are facing."<sup>44</sup> Emphasizing the importance of morals, values and local knowledge, Chief Beaver stated: "All our basis that you base your facts on are from down South. Why don't we base our facts from the facts that are here? Let us make our own facts. Let the people of the Northwest Territories make their facts of how the Mine should operate."<sup>45</sup>

In response to public concern throughout the 1970s and 80s about the arsenic being stored underground, experts and mine employees presented technical evidence that

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<sup>42</sup> Northwest Territories Land and Water Board, "Giant Yellowknife Mines Ltd. Public Hearing Under the Northern Inland Waters Act" (Yellowknife, NWT, April 22, 1975), 15.

<sup>43</sup> Northwest Territories Land and Water Board, "Public Hearing, Giant Yellowknife Mines Ltd." (Yellowknife, NWT, October 10, 1974), 13.

<sup>44</sup> Ibid., 21.

<sup>45</sup> Ibid., 46.

emphasized the use of the best available science and technology. For example, in 1975, when Chretien asked the mining company how they could be sure that the permafrost wouldn't melt and that water wouldn't come into contact with the underground arsenic, A mine employee, responded:

Easy. The storage chambers have been carefully chosen by our Engineers and have been approved by the Mines Inspection Branch... We are using the best Engineering Technology available to ensure that the arsenic stored is in a safe place... We can't visualize a significant change in climate that would change the permafrost level.<sup>46</sup>

This was in fact untrue. Since the implementation of underground storage in the 1950s, there was continual disagreement as to whether the permafrost would in fact keep the arsenic contained. For example, in an internal memorandum in May 1973, the Mining Inspector presented evidence of permafrost thawing throughout the mine workings at depths up to 50 feet and questioned the continued presence of permafrost at the Giant Mine, recommending that the mine should not be allowed to flood if it closed.<sup>47</sup>

According to historical research done for the Final Arsenic Management Alternatives Plan in 2002, "by the end of the 70s, there was strong observational evidence that permafrost in the arsenic storage areas was receding and the movement of groundwater in these areas was increasing."<sup>48</sup> In the 1975 public hearing, when questioned about the

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<sup>46</sup> Ibid., 39.

<sup>47</sup> Erland Bengts, Mining Inspector, "Government of Canada Memorandum," to N.L. Brown, Mining Engineer, in Appendix E, "Government Memos on Arsenic Storage in Yellowknife," in "Document released by the National Indian Brotherhood, the United Steel Workers of America and the University of Toronto on January 15, 1977," unpublished manuscript, Canadian Circumpolar Institute Library. A research program to monitor permafrost was not established until the mid 1990s, when temperature measurement devices were installed in several new drill holes. By the end of the 1970s there was strong observational evidence that permafrost in the arsenic storage areas was receding and the movement of groundwater in these areas was increasing. See: SRK Inc., "Final Report: Arsenic Trioxide Management Alternatives: Giant Mine," prepared for the Department of Indian Affairs and Northern Development (Yellowknife, December, 2002), 28.

<sup>48</sup> SRK Inc., "Final Report: Arsenic Trioxide Management Alternatives: Giant Mine," 28.

levels of arsenic, the company continually responded that the mine was within the acceptable limits and the arsenic was being safely stored underground, to which community members generally responded that it was not in fact acceptable, because they were uncomfortable. The community was promised that the permafrost would keep them safe; that promise was broken.

Another reoccurring problem highlighted in the 1978 and 1981 public hearing was financial security in case of mine closure. According to the 1981 water license, a financial bond of \$150 000 dollars was required. In the 1981 public hearings, John Bayley asked if this had in fact been posted as required by the license and wondered what this money would be used for; he asked how this amount was determined?<sup>49</sup> Answers to questions about financial securities were consistently vague and it is unclear if the financial bond was actually posted, or how the amount was determined.

While scientific research on human and environmental health was increasing throughout the 1970s, not all community members agreed with the methods or results of these studies. After the results of a 1975 health study failed to include First Nations people, the National Indian Brotherhood and the United Steelworkers Union commissioned an independent study. This study showed high levels of arsenic in humans, contradicting earlier government studies and spurring further accusations of cover-ups and lies.<sup>50</sup> Many community members argued that arsenic was a known carcinogen and no amount should be a safe amount. In response, in 1977 the Canadian Public Health

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<sup>49</sup> Northwest Territories Land and Water Board, "Public Hearing: Application for Water License Renewal by Giant Yellowknife Mines Limited," License No. N1L30043 (Yellowknife, NWT, January 27, 1981), 58.

<sup>50</sup> "Document released by the National Indian Brotherhood, the United Steel Workers of America and the University of Toronto on January 15, 1977," unpublished manuscript, Canadian Circumpolar Institute Library.

Association Task Force on Arsenic was established to assess the effects of arsenic on Yellowknife inhabitants. The task force was to recommend any *remedial action* that needed to take place. Suggestions included everything from washing vegetables and berries thoroughly to continuing to increase emission control measures. However, it concluded that there were no significant health impacts on the nearby community and storage underground was considered acceptable. Backed with results that stated that effects were confined to workplace exposure, in public hearings and water licenses, government regulators and the mining company dismissed the concerns of the National Indian Brotherhood and the local community and continually referenced the Task Force's approval of the underground storage as proof that this approach was best practice.

Throughout public hearings, the mine employees, technical experts and board members usually politely dismissed questions about community engagement and local values, saying 'thank-you for your comments' or simply stating that such issues were outside of the scope for the water licensing process, for example:

The board has substantial powers but can use them only to conserve, develop and use the water resource of the Northwest Territories. Political, social, economic and other concerns which arise from a water use proposal are beyond the Board's scope and must be dealt with in other forums.<sup>51</sup>

There were no other processes to raise political and social issues, and by dismissing these concerns the Land and Water Board implied that these questions were illegitimate. Calls to engage with the local community, to recognize government responsibility for historical contamination, and to implement some kind of independent oversight have echoed

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<sup>51</sup> Northwest Territories Land and Water Board, "Public Hearing on an Application by Giant Yellowknife Mines Ltd. Yellowknife Operations to Renew Water License N1L3-0043," (Yellowknife, NWT, November 27, 1985), 2.



throughout the past few decades and later became an important part of community concerns during early remediation planning.

Following public hearings in 1974-1975 and 1981, water licenses were issued in 1978 and 1982.<sup>52</sup> The 1978 water license included the first documented ‘Rehabilitation Program.’<sup>53</sup> The use of the word rehabilitation highlights the idea that the company was focused on returning or gaining some kind of economic value from the site. This program separated rehabilitation strategies into two sections, underground and surface, and focused on creating an inventory of the site. After mining ceased, permafrost would be re-established and would contain the arsenic trioxide underground. The underground would be sealed off and allowed to flood. Surface structures would be sold off or demolished. In general, the plan stated that all areas would be restored to “as much possible a natural type condition,”<sup>54</sup> but the plan failed to give any details on how this would be done. Instead, this plan focused heavily on estimating the economic value of materials and equipment, detailed down to the furniture in the residences, the copper wiring in buildings and any piping or other material that might have been of value.

An Abandonment and Restoration (A&R) plan was published in 1985 as a part of the water license stipulations.<sup>55</sup> This plan outlined three stages of closure, which were used throughout subsequent A&R plans. In the first stage, the mine closed due to low

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<sup>52</sup> Kevin O’Reilly, “Liability, Legacy, and Perpetual Care: Government Ownership and Management of the Giant mine, 1999-2015,” in *Mining and Communities in Northern Canada: History, Politics and Memory*, ed. Arn Keeling and John Sandlos, (Calgary, Alberta: University of Calgary Press, 2015).

<sup>53</sup> Giant Yellowknife Mines Ltd. “Rehabilitation Program,” in a memorandum from G.A. Aaltonen to W.A. Moore, “Water License Requirement for ‘Detailed Proposal of closing of the Mine and Restoration of the Property,’” (August 1, 1978).

<sup>54</sup> *Ibid.*, 1.

<sup>55</sup> Giant Yellowknife Mines Limited, “Abandonment and Restoration Plan for Yellowknife Division Operations,” (October 16, 1985).

profits, but re-opening was seen as a foreseeable possibility. In this stage, everything would stay in place while monitoring, dewatering and water treatment would continue until the mine was again economically viable or moved to stage two. Stage two was extended closure, where mine openings would be sealed off and surface extraction facilities would be ‘moth balled.’ Shut down was rarely considered permanent. Stage two also focused on securing the economic value of the site. In the 1981 public hearing, when asked by a community member if the company had any plans to set aside the resources to ensure that reclamation could be accomplished, Ken Blower, a Giant Mine employee, responded that the value from the salvaged equipment and material would help to cover the costs of clean-up, in addition to the value of infrastructure on site.<sup>56</sup>

Stage three occurred when the mine was no longer economically profitable and facilities were not being used. According to the 1985 A&R plan, stage 3 focused on the:

objective of restoring lands utilized to a condition resembling a natural ecological condition suitable for supporting local fauna. Physical disturbance of land would be covered to reduce further degradation as a result of erosional forces. Vegetation cover is considered the most suitable.<sup>57</sup>

The two major aspects of stage three were: “to reduce the interim period of continued degradation and unsightliness” and “to initiate and accelerate the process of continuous natural recovery.”<sup>58</sup> The company argued that nature could be restored to a condition resembling the original, and that it would continually recover once the initial restoration efforts were initiated. Rehabilitation planning focused on covering up and plugging the

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<sup>56</sup> Northwest Territories Land and Water Board, “Public Hearing: Application for Water License Renewal by Giant Yellowknife Mines Limited,” License No. N1L30043 (Yellowknife, NWT, January 27, 1981),

<sup>57</sup> Giant Yellowknife Mines Limited, “Abandonment and Restoration Plan for Yellowknife Division Operations,” (October 16, 1985), 5.

<sup>58</sup> Ibid.

holes, revegetating and leaving nature to ‘take care of itself.’ The prospect of perpetual monitoring and care was not acknowledged in any stages of this plan.

In addition, the 1985 A&R plan still rested on the fundamental idea that permafrost could be reintroduced to deal with the arsenic chambers. The mining company relied on the Federal CPHA Task Force on Arsenic’s Final Report in 1977 to support its decision to contain the waste underground. Little new research was published on the soundness of this decision in preparation for the A&R plan in 1985. In fact, the mining company planned to recover the stored arsenic prior to abandonment and purify and sell it alongside all the other equipment and salvageable items, essentially ‘re-commodifying’ the waste.<sup>59</sup> In the 1985 A&R plan, the mining company does take responsibility for the underground mine waste, saying:

In general it could be said that Giant recognizes its responsibilities and liabilities for the careless use of chemicals. If runoff waters get polluted the company remains responsible but it is expected that if any problems exist, they will be identified long before abandonment.<sup>60</sup>

The company wasn’t in fact held responsible for contamination and the permafrost did not come back.

While scientific research on water management increased throughout the 1970s and 1980s, this did not necessarily translate into company policy, practice or remediation planning. The intent of the 1978 and 1982 remediation plans was quite ambiguous and allowed for a lot of different outcomes. While the mining company committed itself to restoring aesthetic and environmental value to the site, they glossed over the details. The

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<sup>59</sup> Arn Keeling, “Mineral Waste,” in *SAGE Encyclopedia of Consumption and Waste: the social science of garbage* (California, U.S: SAGE Publications, 2012), 553.

<sup>60</sup> Giant Yellowknife Mines Limited, “Abandonment and Restoration Plan for Yellowknife Division Operations,” (October 16, 1985), 18.

language used ranged from restoring all areas to “a condition that, as closely as practical, duplicates natural environmental conditions and is aesthetically pleasing” or “to leave facilities that can be used by the general public for recreation purposes,” or “to leave areas in their present condition if we have been requested to do so.”<sup>61</sup> The 1978 plan claimed that after a year of improved water management around Baker Creek the “vegetation is lush and green... and is growing right to the waters edge. Two more run off seasons will clean the Creek and restore it to its natural condition.”<sup>62</sup> Both plans concluded that life would once again inhabit the area when water quality improved, which would happen naturally over time.<sup>63</sup>

In a written submission to a public hearing in 1985, the Dene Nation questioned the previous 1982 Abandonment and Restoration plan, stating:

The company concludes that this Abandonment and Restoration Plan... is not ‘a statement of fixed intentions.’ What degree of commitment is there to this plan? The Dene Nation feels that the abandonment plan should be accompanied by a financial bond large enough to ensure that the proposed activities will be undertaken and completed upon abandonment.<sup>64</sup>

As highlighted in this statement, the mining company put little serious thought put into long-term planning or remediation funding. Well into the 1990s, details in closure plans were carried over from one plan to the next without much additional research or information provided.

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<sup>61</sup> Ibid

<sup>62</sup> Ibid.

<sup>63</sup> The plans referenced the following study as proof that nature would return to its previous state: James Moore, Susan Wheeler and David Sutherland, “The Effects of Metal Mines on Aquatic Ecosystems in the Northwest Territories: Giant Yellowknife Mines Limited” (Northwest Region: Environmental Protection Service: Fisheries and Environment Canada, June 1978).

<sup>64</sup> Dene Nation, “Presentation to NWT Water Board on the Application by Giant Mines Ltd., for the renewal of their water license,” in Northwest Territories Land and Water Board, “Public Hearing on an Application by Giant Yellowknife Mines Ltd. Yellowknife Operations to Renew Water License N1L3-0043” (Yellowknife, NWT, November 27, 1985).

Throughout the this period, despite the fact that the NWT Land and Water Board was created, the increase in research, regulation and bureaucracy did little to address community concerns about responsibility, transparent communication, financial security, cumulative arsenic contamination or mine closure. Public hearings operated within a colonial structure that favoured industry and economy over local concerns. The NWT Land and Water Board provided no mechanism or regulations to hold companies responsible to clean up or to engage communities in these kinds of decisions.

### **1990s: Protest and Bankruptcy**

Throughout the 1990s there were several important developments in the Northwest Territories and Canada more generally that contributed to more robust environmental policy regime. In the Northwest Territories, increased environmental regulations coincided with the move towards devolution from the federal government. Specifically, in the Northwest Territories, the development of modern diamond mines initiated a new push for increased regulation and impact benefit agreements. While the diamond mines were being developed, communities across the NWT continually referenced Giant Mine as something that should never happen again.<sup>65</sup> New environmental regulations in the NWT included the creation of the Mackenzie Valley Resource Management Act (1998), which lead to the initiation of the Mackenzie Valley Land and Water Board and the Environmental Impact Review Board. Federally, increased environmental concern was expressed through the update of the Canadian Environmental

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<sup>65</sup> Ellen Bielawski, *Rogue Diamonds* (New York: Dougals and McIntyre, 2003). For a critique of diamond mining and impact benefits agreements in the NWT and Northern Canada, see: Rebecca Hall, "Diamond Mining in Canada's Northwest Territories: A Colonial Continuity," *Antipode* 45, no. 2 (2013).

Protection Act (1999).<sup>66</sup> In regards to mining, these updated regulations focused on evaluating impacts during operation and did not directly address remediation or responsibility for waste after mine closure.<sup>67</sup>

Throughout the 1990s, the majority of contention regarding the Giant Mine was caused by the new mine owner, Royal Oak, who purchased the Giant Mine in 1990.<sup>68</sup> Many contemporary negative associations with the mine come from company-community interactions during the time of Royal Oak's ownership. The most notable incident was the workers strike in 1992.<sup>69</sup> Royal Oak refused to negotiate with employees, and instead brought in replacement workers from elsewhere and continued operations. Roger Warren, a disgruntled mine employee, planted a bomb in the mine, killing nine temporary mine workers.<sup>70</sup> These negative memories are attached to the mine site and are often brought up when discussing remediation or the history of Giant Mine: "I was here in town the day the miners were all killed and you know, it was a very memorable experience. I wouldn't wish it upon anyone."<sup>71</sup>

In addition, many community members felt that Royal Oak was not a cooperative or responsible mining company.<sup>72</sup> For example, in 1993, as a part of a public hearing submission to the NWT Land and Water Board, Clark Marcino, a concerned Yellowknife

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<sup>66</sup> Diana Valiela & Christopher Baldwin, (2007), "Dealing with Mining Legacy – Some Canadian Approaches," *Lawson Lundell LLP* (2007).

<sup>67</sup> Dance, "Northern Reclamation in Canada."

<sup>68</sup> The Giant Mine had several owners throughout fifty years of operation: Giant Yellowknife Gold Mines Ltd./B.E.A.R. Limited (1939-1944), Giant Yellowknife Gold Mines Ltd./Venture Ltd (1945-1962), Giant Yellowknife Gold Mines Ltd./Falconbridge Nickel Mines Ltd. (1962-1986), Giant Yellowknife Gold Mines Ltd./Pamour Incorporated (1986-1990), Royal Oak Mines Incorporated (1990-1999).

<sup>69</sup> Ryan Silke, *The Operational History of Mines in the Northwest Territories, Canada*.

<sup>70</sup> Lee Selleck and Francis Thompson, *Dying for Gold: The True Story of the Giant Mine Murders*, (Harper Collins, 1997).

<sup>71</sup> Gordon Hamre (former Environment Canada employee and volunteer with Alternatives North) in interview with author (May 27, 2016).

<sup>72</sup> O'Reilly, "Liability, Legacy, and Perpetual Care."

citizen, emphasized Royal Oak's, "production at any cost attitude,"<sup>73</sup> and after listing the various suits and charges against Royal Oak at the time, Mr. Marcino stated that, "all these issues should be considered when the water board decides if Royal Oak has earned the right to any breaks or concessions."<sup>74</sup> Throughout public hearings, several community members reminded the Land and Water Board that their decisions were political, and that they were empowered to protect the community, rather than facilitate the profits of Royal Oak.<sup>75</sup> Royal Oak continued to operate within the precedents of limited transparency and concern for community health that had been set in the early days of the mine.

Royal Oak published Abandonment and Restoration (A&R) plans in 1992, 1994 and 1998, alongside renewals of their water license. The 1992 plan was very similar to plans published by the previous mine owner in 1980s and focused on securing economic value, with a vague objective to "enhance the natural recovery of areas affected by mining activities."<sup>76</sup> Royal Oak was hesitant to carry out any restoration practices that might inhibit future mining prospects.<sup>77</sup> The focus on aesthetics and the goal of zero ongoing maintenance was emphasized more heavily throughout the 1992 report than in previous plans. Royal Oak also planned to *recreate* permafrost around the tailings ponds by covering them with thick, insulating rock covers, in addition to sealing off the

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<sup>73</sup> Clark Marcino, "Public Hearing Submission to the NWT Land and Water Board on the application of Royal Oak Mines Ltd. to delete Ammonia emissions standards from License N1L3-0043," submitted to the NWT Land and Water Board (October 26, 1993), 2.

<sup>74</sup> *Ibid.*, 3-4.

<sup>75</sup> Northwest Territories Water Board, "Public Hearing on an Application By Royal Oak Mines Inc. – Giant Mine To Have The Requirement to Meet Specified Ammonia Levels Removed From Water License, N1L30043" (Yellowknife NWT, October 1993); Peter Atamanenko "Public Hearing Submission to the NWT Land and Water Board on the application of Royal Oak Mines Ltd. to delete Ammonia emissions standards from License N1L3-0043," Submitted to the NWT Land and Water Board (October 26 1993).

<sup>76</sup> Royal Oak Mines Ltd. Yellowknife Division, "The Giant Mine Abandonment and Restoration Plan" (September, 1992), 1.

<sup>77</sup> Royal Oak Mines Ltd. Yellowknife Division, "The Giant Mine Abandonment and Restoration Plan" (September, 1992), 18

underground arsenic chambers, rendering both the tailings ponds and the underground arsenic “chemically inactive.”<sup>78</sup> The 1992 remediation plan did not include any additional research on the continued effectiveness of containing the underground arsenic in permafrost. Royal Oak predicted that monitoring or maintenance would only be necessary for a few years after abandonment was complete.<sup>79</sup>

Following the 1994 water license renewal,<sup>80</sup> the Canadian Environmental Protection Act identified the arsenic trioxide found at Giant as a toxic substance that required immediate action to reduce exposure.<sup>81</sup> In 1995 the Parliamentary Standing Committee on the Environment and Sustainable Development recommended that Environment Canada identify what action it would take at Giant by the end of the year to remedy the arsenic contamination and storage. This Committee was particularly concerned with the perceptions of arsenic among the Yellowknives Dene. Public consultations and testimony from elders revealed a “loss in confidence in the government’s ability to protect their environment and health. Nowhere was this loss of trust more apparent than on the issues of arsenic pollution.”<sup>82</sup> In August 1995 the Yellowknife City Council adopted a motion asking the federal and territorial governments

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<sup>78</sup> Ibid.

<sup>79</sup> Ibid.

<sup>80</sup> Royal Oak Mines Ltd., “Application for and Amendment of the Water Use License N1L3-0043 The Giant Mine in Yellowknife, NWT, Total Ammonia Levels” (August, 1993). The renewal of the water license for 1994 included some small changes regarding underground storage of the arsenic and the ultimate closure and reclamation of the site. The major issue at this time was another request to delete ammonia emissions standards, which Royal Oak had continually violated and had stated that the technology to regulate and reduce ammonia did not exist and therefore, the company should not be responsible. Many community members disagreed: see Public Hearing Submissions from Community Members to the NWT Land and Water Board, October 1993, N1L2-0043.

<sup>81</sup> “It’s About Our Health! Towards Pollution Prevention, CEPA Revisited,” Report of the House of Commons Standing Committee on Environment and Sustainable Development (June 1995).

<sup>82</sup> O’Reilly, “Liability, Legacy, and Perpetual Care,” 348; “It’s About Our Health! Towards Pollution Prevention, CEPA Revisited: Report of the House of Commons Standing Committee on Environment and Sustainable Development” (June 1995), 196.



to “take immediate steps to introduce enforceable, binding regulations dealing with sulphur dioxide and arsenic.”<sup>83</sup> In response the territorial and federal governments organized a task force for pollution management, culminating in a workshop in July 1997, which ended in recommendations for an agreement between Royal Oak and the government to impose a reduction in arsenic emissions and to monitor and reduce the discharge of sulphur dioxide.<sup>84</sup> In response, Royal Oak openly threatened to shut down the mine if such regulations were enforced. Nothing further happened and the ultimate solution was to wait for the mine to shut down.<sup>85</sup>

At this same time, DIAND, anticipating Royal Oak’s inability to comply with the original terms of its 1994 water license, began its own studies on the underground arsenic in preparation for a 1998 water license renewal and public hearing.<sup>86</sup> In 1997, DIAND contracted Dillon Consulting Ltd. to draft a report outlining possible options for how to deal with the arsenic contamination. This report, released in October 1997, included several management options with costs ranging from 10 million to 1.2 billion.<sup>87</sup> Technical meetings to review this report were held in October 1997 with representatives from the GNWT, the City of Yellowknife, the federal government and several university researchers attending, but no representatives from the Yellowknives Dene or other

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<sup>83</sup> O’Reilly, “Liability, Legacy, and Perpetual Care,” 348; “Minutes of Yellowknife City Council, Motion 30417-95” (August 28, 1995).

<sup>84</sup> O’Reilly, “Liability, legacy, and perpetual care,” 349; Environment Canada, “Workshop on Controlling Arsenic Releases into the Environment in the Northwest Territories, Final Workshop Report” (October 1997).

<sup>85</sup> O’Reilly, “Liability, Legacy, and Perpetual Care.”

<sup>86</sup> SRK Inc., “Final Report: Arsenic Trioxide Management Alternatives: Giant Mine.”

<sup>87</sup> Dillon Consulting Ltd., “Arsenic Trioxide Management Feasibility Study,” for Indian and Northern Affairs Canada, (October 1997).

community groups were invited.<sup>88</sup> This technical workshop included discussions about the public perception of waste and the environmental justice issues associated with moving waste elsewhere. However, issues of public perception were clearly seen as an education problem. In other words, the community just needed to be educated about arsenic rather than actually engaged in the remediation process.

The Dillon report was critical because it was the first to openly acknowledge that reintroducing permafrost was not likely to contain the arsenic indefinitely. In addition, the report argued that: “The relative uncertainty of the world arsenic trioxide market and the presence of arsenic in waste streams from any purification processes may require development of a process to stabilize arsenic trioxide for long term storage.”<sup>89</sup> The Dillon report outlined four strategies for arsenic management: underground storage, transportation to surface, processing to upgrade and processing to stabilize. The underground storage option was seen as the cheapest and, although human health risks were predicted to be low, environmental/ecological health risk was rate medium, and long-term liability risks were rated high.<sup>90</sup> The report concluded that, under the Canadian Environmental Assessment Act:

If the project is deemed to have an effect on the environment including effect or change on: health and socio-economic conditions; physical and cultural heritage; current use of land and resources; the land, water and air; organic and inorganic matter and living organisms and interacting natural systems, a comprehensive study may be required.<sup>91</sup>

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<sup>88</sup> Dillon Consulting, “Giant Mine Arsenic Trioxide Management Technical Meeting Proceedings” for the Department of Indian Affairs and Northern Development (October 28, 29 and 30, 1997).

<sup>89</sup> Dillon Consulting Ltd., “Arsenic Trioxide Management Feasibility Study,” 18.

<sup>90</sup> Ibid.

<sup>91</sup> Ibid., 13.

Thus, in the 1990s, there were early indications that planning for arsenic management, closure and restoration would have to go through environmental review. However, the federal project team later avoided such an approach.

Along with the Dillon report, in November of 1997, Brodie Consulting published a *Report of Giant Mine Closure Cost Estimate*, which “characterized the financial liability associated with the ultimate closure of the mine.”<sup>92</sup> This report indicated multiple shortcomings with the 1992 and 1994 A&R plans. Such shortcomings included a lack of planning for water management and the stability of tailings impoundments, or for the clean up of tailings in Yellowknife Bay and Baker Creek. This report also pointed out that Royal Oak had failed to meet the Land and Water Board’s request in July of 1996 to provide concrete remediation options and maps depicting areas of contamination as a part of water license updates. In general, there was a growing concern that the use of permafrost to contain the arsenic would not be sufficient and according to Brodie Consulting, “consequently it is probable that any closure option which relies upon sub-zero temperature to prevent migration of arsenic will require perpetual intervention.”<sup>93</sup> This is the first time the reality of a perpetual care situation is openly recognized. Finally, the Brodie report noted that, “the amount for monitoring and maintenance would be required in cash as part of the reclamation security so that the fund for perpetual operations could be established.”<sup>94</sup>

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<sup>92</sup> Brodie Consulting Ltd, “Report on Giant Mine Closure Cost Estimate,” prepared for Department of Indian Affairs and Northern Development (November 27, 1997), 1.

<sup>93</sup> Brodie Consulting Ltd, “Report on Giant Mine Closure Cost Estimate,” prepared for Department of Indian Affairs and Northern Development (November 27, 1997), 21.

<sup>94</sup> Ibid. 19.

While the Dillon and Brodie reports showcased the growing concern about the perpetual contamination problem at Giant, much of the information presented in these reports was not reflected in Royal Oak's subsequent 1998 A&R plan. The objectives of this plan remained similar to past plans, focusing on: public health liabilities, enhancing natural recovery, minimizing requirements for long term care, and returning the site to an aesthetically acceptable condition. The plan included an extensive description of the site and the history of mining there, but did not mention community relations or social and political history. In contrast to the Dillon and Brodie reports, Royal Oak stated that, "the dry arsenic trioxide does not pose a significant risk to the environment, provided the underground workings are dewatered."<sup>95</sup> Containing the arsenic underground relied on a perpetual care plan, something that the company was hoping to avoid, and they therefore favoured alternatives based on waste removal. According to Royal Oak, removal options included: storage in a suitable facility, the conversion to ferric arsenate (a less toxic state), or the conversion and upgrade of arsenic into a usable form that could be sold. According to Royal Oak, "of these three options, the first two appear to have relatively high technical, environmental and/or economic risks."<sup>96</sup> Therefore, Royal Oak focused efforts on the third option, which appeared to have the most manageable risks. The Brodie Consulting report disagreed, stating the sale of arsenic was not economically viable, and some kind of long-term care and management would be required for residues and other contaminated soils.

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<sup>95</sup> EBA Engineering Consultants Ltd. and Royal Oak Mines Ltd., "Giant Mine Abandonment and Reclamation Plan" (December 1998), 54.

<sup>96</sup> Ibid.

Leading up to the bankruptcy of Royal Oak in 1999, it was clear that all levels of government were unprepared to pressure the company into compliance with pollution controls or remediation planning and were focused on ensuring the continued operations of the mine.<sup>97</sup> Despite suspicions that the mine would soon close, in 1998 the Land and Water Board renewed Royal Oak's water license with a requirement to submit a full arsenic management plan by October 1999. Financial securities remained the same (\$400,000), but were to gradually increase to \$7 million at the end of the term of the license. When Royal Oak went bankrupt the money wasn't there and the arsenic management plan wasn't finished. Falling ore prices were used as an excuse for slow action and limited funds put towards closure plans.<sup>98</sup> After Royal Oak Mines Inc. filed for bankruptcy in February 1999, Miramar, the owner of the nearby Con Mine, was contracted by the federal government as an interim-receiver and was allowed to continue mining operations. When it could no longer cover the costs of mining, Miramar relinquished the property to DIAND on June 30, 2005.<sup>99</sup> Permitting to allow for the complete decommissioning and remediation of the Giant Mine property then commenced and has yet to be finalized 12 years later.

## Conclusions

Piper compares industrial processes to bodily processes: "ores were the principle inputs, digested through the actions of industrial workers and machines, powered by fossil

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<sup>97</sup> O'Reilly, "Liability, legacy, and perpetual care."

<sup>98</sup> Ibid.

<sup>99</sup> Ryan Silke, *The Operational History of Mines in the Northwest Territories, Canada*.

fuels, and culminating in the production of wastes...”<sup>100</sup> These wastes stayed in place, creating legacies in the waters and on the land, while the end products were shipped elsewhere: “This final divorcing of end products from local nature reflected the prerogatives and objectives of international capital rather than the inevitable consequences of industrial technologies and fuels.”<sup>101</sup> At the Giant Mine, the majority of the people controlling mining, conducting research and making decisions were far away from the actual site, or did not live there year round. Decisions made from afar, based on abstractions that emphasized chemistry, geology and other scientific data over the relationships between different species proved inadequate, leading to environmental and social degradation. The traditional lands of the YKDFN were seen as lands that could be ‘wasted,’ and in turn, the YKDFN were seen as people who could be ‘wasted.’<sup>102</sup>

This history of industrial, technocratic-based decision-making carried over into planning for remediation, restoration and long-term care. A lack of government regulation and enforcement was a key facilitator in allowing arsenic contamination at Giant.<sup>103</sup> Before the 1970s there were few regulations regarding mine environmental contamination, mine closure or remediation. Those that did exist focused on worker health risks.<sup>104</sup> In addition, while regulations were introduced over the years, they were not necessarily enforced. It is evident through the Giant Mine public hearings since the 1970s that the community was often at odds with regulators, scientists and mine management: people who were not from their community, and did not understand or

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<sup>100</sup> Liza Piper, *The Industrial Transformation of Subarctic Canada* (UBC Press: Vancouver, 2009), 284.

<sup>101</sup> Ibid., 285.

<sup>102</sup> Voyles, *Wastelanding*.

<sup>103</sup> Sandlos and Keeling, *Giant Mine: Historical Summary*.

<sup>104</sup> Dance, “Northern Reclamation in Canada.”

acknowledge the communities' fears, perspectives or knowledge, especially in regards to the YKDFN. Regulations, constructed by a colonial government, excluded Indigenous people, who in turn, became victims of the very policies that were supposed to protect their environment.<sup>105</sup> Industry, employment and the economy were the main drivers for decision-making.

Throughout fifty years of mining operations at the Giant Mine, there were several specific flashpoints, or key concerns that were mentioned by community members in public hearings and that continue to be brought up by stakeholders today through their calls for environmental justice. These concerns include: justice for the death of the Dene child and for other unrecorded deaths and illnesses; the lack of sufficient health information regarding arsenic poisoning; the lack of communication and transparency regarding cumulative arsenic contamination; the contamination of water and food sources; the unwillingness of the Land and Water Board to address broader issues of colonialism, cumulative contamination and long-term care; and the inability of the government to meaningfully enforce regulations. These concerns went unaddressed, creating a monster of public mistrust, in addition to the arsenic monster underground.

Memories of arsenic contamination and a lack of government and industry transparency throughout the life of the mine are fundamental to the narrative surrounding remediation at Giant Mine today. According to one community member: "One way or another... Giant mine is a part of Yellowknife and people, I think, agree that Giant is and

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<sup>105</sup> Rebecca Tsosie, "Indigenous Peoples and the Ethics of Remediation: Redressing the Legacy of Radioactive Contamination for Native Peoples and Native Lands," *Santa Clara Journal of International Law* 13, no. 1 (2015): 203-272.

will always be a part of Yellowknife, the good, the bad and the ugly.”<sup>106</sup> Throughout the 1940s, 1950s and 1960s, precedents were set that favoured industry, with governments ignoring evidence of health effects, downplaying local concerns and alienating the First Nations community from their traditional lands. Health and environmental studies conducted from the 1960s until the late 1990s served only to maintain this status quo. In addition, public hearings lacked transparency and worked within a colonial system that benefited government and industry. Local communities were given no chance to voice their opinions on mine operations or the definitions and objectives of mine closure and remediation. After the final closure of the Giant Mine in 2005, what may have initially been seen as a technically challenging contamination project quickly morphed into a much more complex and far reaching public discourse on the nature of waste, the relationship the community had to this contaminated site and how such problems should be dealt with far into the future.

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<sup>106</sup> Tyree Mullaney (Mackenzie Valley Land and Water Board employee, Giant Mine file manager) in interview with author (June 8, 2016).



## CHAPTER 4

### CONTAINING THE GIANT MINE MONSTER

*“I think [remediation] incorporates principles of risk management that... if we take a risk based approach it's about making sure that the harmful substance isn't available to a potential receptor, so essentially removing that pathway.”*

*-Craig Wells, Giant Mine Remediation Project Team*

#### Introduction

Since the bankruptcy of Royal Oak in 1999, Canadian taxpayers have paid over \$160 million to care for the Giant Mine site.<sup>1</sup> Seventeen years later, the government's projected costs for remediation are now estimated at over a billion dollars and the site will require perpetual care, which is estimated to cost up to \$2 million per year indefinitely. With this kind of price tag, in addition to the social and environmental scars caused by mining, it is evident why the Yellowknife community was, and still is, very concerned. Initially however, community engagement processes received little attention from the Giant Mine Remediation Project Team (GMRPT), resulting in a technically focused Giant Mine Remediation Plan that was rejected by the community in 2007. This Giant Mine Remediation Plan proposed the ‘frozen block method’ as the best option for arsenic remediation at the Giant Mine.<sup>2</sup> The ‘frozen block method’ uses thermosyphon technology to freeze the ground around the arsenic chambers, essentially sealing these

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<sup>1</sup> Kevin O'Reilly, “Liability, Legacy, and Perpetual Care: Government Ownership and Management of the Giant mine, 1999-2015,” in *Mining and Communities in Northern Canada: History, Politics and Memory*, ed. Arn Keeling and John Sandlos (Calgary, Alberta: University of Calgary Press, 2015).

<sup>2</sup> SRK Consulting, *Giant Mine Remediation Plan*, prepared for Indian and Northern Affairs Canada (2007).

areas off from the environment around them.<sup>3</sup> This plan required that the site be monitored and maintained in perpetuity, although it did not address the implications of perpetual care. In addition, there are currently ninety-five hectares of contaminated mine tailings on the surface, eight open pits and numerous buildings and contaminated infrastructure.<sup>4</sup> The 2007 Remediation Plan proposed that the project would cover and revegetate the tailings ponds, fence off the pits and continue water treatment and monitoring until such a time came that it was no longer necessary.

For several reasons, the community stakeholders were unsatisfied with this remediation plan.<sup>5</sup> They were unsure of how the site would be monitored and maintained in the future, and they were unsatisfied with the level of consultation undertaken, the transparency of government decisions, and the lack of independent oversight. For these reasons, among others, in 2008 the Yellowknives Dene First Nations and Alternatives North, a social justice NGO in the NWT, petitioned the City of Yellowknife to request a mandatory referral of the remediation plan to Environmental Assessment (EA) from the Mackenzie Valley Environmental Impact Review Board (MVEIRB).<sup>6</sup> The EA, completed in 2013, led to the signing of the Giant Mine Remediation Project Environmental Agreement in June 2015.<sup>7</sup> This agreement is a legally binding document that holds the co-

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<sup>3</sup> SRK Consulting Ltd., *Final Report: Arsenic Trioxide Management Alternatives: Giant Mine*, prepared for Department of Indian Affairs and Northern Development (December 2002).

<sup>4</sup> O'Reilly, "Liability, Legacy, and Perpetual Care," 344.

<sup>5</sup> The community stakeholders include: The City of Yellowknife, the YKDFN, the North Slave Metis Alliance, and Alternatives North. The co-proponents are the Department of Indigenous and Northern Affairs (under various names) and the Government of the NWT. Other federal departments are also included in review and public hearing processes, including Environment Canada, Health Canada, the Department of Fisheries and Oceans, and the Department of Public Works. Observers and others involved include the Mining Heritage Society and the Dene Council.

<sup>6</sup> Office of the Mayor, Yellowknife, "Letter of Referral of Environmental Assessment from the City of Yellowknife" (March. 31, 2008).

<sup>7</sup> *Giant Mine Remediation Project Environmental Agreement* (June 9, 2015).

proponents, consisting of the federal and territorial governments, responsible to twenty-six binding measures and sixteen suggestions, including consistent community engagement, the completion of a human health study, and the preparation of a perpetual care plan, among other things.<sup>8</sup> This agreement also resulted in the establishment of the Giant Mine Oversight Board (GMOB), an independent oversight group responsible for continued research and education related to the Giant Mine Remediation Project.<sup>9</sup> The Giant Mine is the only known mine in Canada to date where an environmental assessment and agreement have been carried out for a mine remediation process.<sup>10</sup>

This chapter recounts the research, consultations, and planning processes leading up to the rejection of the 2007 Giant Mine Remediation Plan, focusing on how the government chose to frame the Giant Mine Remediation Project early on and why the community ultimately rejected this remediation plan. I will then analyze the process of environmental assessment (EA) that followed, focusing on how this process provided a platform for community discussion and engagement. From this analysis, this chapter focuses on two, connected arguments. First, despite good intentions to clean up the Giant Mine, the initial focus on arsenic management deterred good research on the overall impacts and history of the Giant Mine. In addition, a risk management approach to remediation assumed that after ‘caging’ or ‘taming’ the underground arsenic monster in a

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<sup>8</sup> MVEIRB, *Report of Environmental Assessment and Reasons for Decision: Giant Mine Remediation Project*.

<sup>9</sup> Giant Mine Oversight Board, *Establishment Report* (April 2017).

<sup>10</sup> One example of an environmental/economic agreement for remediation is the remediation of The Distant Early Warning (DEW) Line, which is defined by four agreements. The first was signed in 1996 between the Inuvialuit Settlement Region and the Department of National Defense (DND) for radar sites in the NWT and Yukon. The other three agreements were signed between 1998-2005 between DND and the Inuit, represented by Nunavut Tunngavik Incorporated for radar sites in Nunavut: <http://www.forces.gc.ca/en/news/article.page?doc=the-distant-early-warning-dew-line-remediation-project/hgq87xvs>.

frozen block, the other aspects of remediation such as surface clean up, water monitoring, perpetual care and the restoration of Baker Creek would fall into place over time, as the tailings were capped, the buildings removed and nature ‘healed itself.’ The focus on containing the arsenic monster sidelined community concerns on mine legacies, perpetual care, surface remediation, future land uses and communication with future generations. Second, I argue that rather than using the environmental assessment process strictly for risk assessment, the community, having no other official venue or platform, used the EA structure and process as a mechanism to voice their broader concerns about community and environmental health, risk perceptions, environmental injustices, power relations, independent oversight, and perpetual care.

Through the EA process, the community attempted to hold the government accountable to these concerns. While little about the technical and material design and management of the site has changed, community stakeholders dramatically altered the *process* of how remediation is defined, discussed, and planned for. In this sense, the EA and the resulting environmental agreement set up an ongoing process for trust building, communication and social license; it introduced an ongoing discussion of how past injustices should be dealt with, how unequal power relationships should be recognized and overcome and how the community of Yellowknife might begin looking at the broader implications of mine waste, remediation and perpetual care. While the Giant Mine Remediation Project still has many faults and challenges, most community members came to a negotiated consensus through the EA process. And while they continue to be critical, there is at least a dynamic dialogue surrounding the question of how such a contaminated site should be remediated and cared for.

### **Defining Ownership, Boundaries and Responsibility at the Giant Mine (1999-2001)**

In the years immediately following the bankruptcy of Royal Oak, public interests aimed at confronting remediation challenges were “always subservient to the economic interests at play.”<sup>11</sup> Both the federal and territorial governments put importance into the continuance of the mine for both economic and political reasons. In a community built on mining, the loss of revenue, jobs and a sense of identity were difficult to overcome quickly. In addition, keeping the mine running gave the government more time to determine suitable remediation measures and funding. According to O’Reilly, there were two major developments resulting from the bankruptcy of Giant Mine. First, an agreement was signed on July 1, 2000 with Miramar Giant Mine Ltd., which owned Con Mine on the south side of the City of Yellowknife. This agreement allowed Miramar to continue mining the ore, while transporting it to Con Mine where it was processed. Second, within this agreement all levels of government agreed to provide subsidies and assistance in order to keep the mine operating.<sup>12</sup> However, liability for environmental conditions existing prior to Miramar’s operation remained the responsibility of the federal government.<sup>13</sup> DIAND also assumed responsibility for the preparation of the Arsenic Trioxide Project Description, which Royal Oak had failed to complete before bankruptcy. The YKDFN were not consulted in the negotiations for the Miramar agreement.

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<sup>11</sup> O’Reilly, “Liability, Legacy, and Perpetual Care,” 353.

<sup>12</sup> *The Agreement Between the Government of the Northwest Territories and Miramar Giant Mine Ltd.* (July 1, 2000). The City of Yellowknife did so unwillingly. They did not receive taxes from the site during these years. The City of Yellowknife had previously agreed to lease the townsite and water front areas in lieu of property taxes owed with the understanding that these areas would be remediated to a residential or recreational standard. This has been a continuing point of contention with the City throughout the Environmental Assessment and remediation processes. See: O’Reilly, “Liability, Legacy, and Perpetual Care,” 354-355.

<sup>13</sup> *The Agreement Between the Government of the Northwest Territories and Miramar Giant Mine Ltd.*

At the same time that the territorial and federal governments were facilitating continued mining and economic interests, they were also the defining the space of remediation without community engagement (Fig. 2). Between 1999 and 2001, the federal government remediation project focused on defining the material liabilities of the site and the options for arsenic management; community engagement was not considered a primary concern.<sup>14</sup> Limited regulation throughout the majority of mine operations and a lack of transparency between the mine company and the government meant that there was little sufficient research to characterize contamination and remediation. To help fill this gap, the Yellowknife Arsenic Soil Remediation Committee was created in 1999 and included multiple community stakeholders such as the Yellowknives Dene First Nations. However, studies organized by this working group did not include traditional knowledge, extensive fieldwork or community consultation, and focused mainly on establishing thresholds for arsenic contamination. Additional research initiated by the federal Royal Oak Project Team (later to become the Giant Mine Remediation Project) focused entirely on arsenic management.<sup>15</sup> Before 2002, no research was done on community values or perceptions of the Giant Mine remediation, and community members were not involved in setting the parameters for early arsenic management research.

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<sup>14</sup> A Public Registry was set up in 2001 and open house information sessions were held on March 26 and 27, 2001. However, the majority of public workshops and presentations did not begin until after the arsenic trioxide management alternatives had already been determined.

<sup>15</sup> SRK Consulting, *Final Report: Arsenic Trioxide Management Alternatives: Giant Mine*, prepared for the Department of Indian Affairs and Northern Development (December 2002).

Fig. 2 Timeline of the Giant Mine Remediation Project 1999-2008

1999	Bankruptcy of Royal Oak
2000	Agreement between Miramar, the Federal Government and the GNWT
2000-2001	GMRP hires technical Advisor, SRK Limited and begins research for arsenic trioxide management.
Mar, 2001	GMRP initiates public communications, including: mine site tours, radio interviews etc.
May 2001	Arsenic Management Alternatives Study published
Jun, 2001	Workshop on Phase 1 of the Arsenic Trioxide Management Alternatives.
Sep, 2001	Miramar published the Final A&R Plan
Nov-Dec 2001	Focus groups with the public on perceptions of arsenic trioxide.
Jan, 2002	Lutra Associates publishes: "Awareness Testing: Findings from the Focus Group on Giant Mine and the Arsenic Trioxide"
Feb-Mar, 2002	Open House in Yellowknife (Feb 2002); Public information meetings in Dettah, N'dilo and Yellowknife (March 2002)
Mar, 2002	GeoNorth publishes the "Final Report for Developing Options and Recommendations to Establish and Operate a Giant Mine Community Liaison Committee."
Apr 2002	Yellowknife Arsenic Soil Remediation Committee publishes: "Human and Ecological Health Risks Assessments" and "Determining Natural or Background Arsenic Levels in Yellowknife"
Dec 2002	SRK publishes: "Final Report: Arsenic Trioxide Management Alternatives"
Jan 2003	Public Workshop - presentation of the Final Report: Arsenic Trioxide Management Alternatives
Feb-Apr, 2003	GMRP website launched, display installed in the Center Square Mall, Giant Mine Community Alliance created
Jan 2005	Federal Contaminated Site Action Plan initiated
Mar, 2005	Cooperation Agreement between the Government of Canada and the Government of the NWT respecting the Giant Mine Remediation Project
Oct, 2005	YKDFN publish: "Giant Mine - Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report"
Oct, 2005	GMRP publishes: "Final Draft - Giant Mine Remediation Plan"
Dec, 2005	Review of the Final Draft, Giant Mine Independent Peer Review Panel
July, 2007	GMRP publishes: "Giant Mine Final Remediation Plan"
Feb, 2008	MVLWB approve the Giant Mine Remediation Project for licensing.

Initial communications from the federal government focused on reassuring the community that everything was under control regarding the clean up of the site. The first interactions that the Giant Mine Remediation Project had with the general public occurred in March of 2001, more than a year after DIAND took control of the site. This communication focused on media interviews, and was not a full-scale engagement process. The local radio station, CJCD broadcasted on March 22 that some clean up had been done on the surface, but further research was underway. Dave Nutter, the senior advisor with DIAND stated: “We’ve been cleaning up waste batteries, waste oil on surface. We’ve done a lot of soil sampling and drilling looking for contaminated waste sites.”<sup>16</sup> Nutter also noted that the clean up of the underground, with the exception of the arsenic trioxide, shouldn’t take a considerable amount of time because most of the material can be sealed off.<sup>17</sup> In an interview done with CBC around this time, Nutter emphasized that even if the water pumps stopped working underground, water flooding and contamination would not occur for four to five years: “so it’s a very, very slow leak.”<sup>18</sup> In this way, the remediation at Giant Mine was presented as something ‘under control.’ There was no rush. However, there were limited opportunities for community members to actually express their questions, concerns and expectations regarding Giant Mine; communication was relatively one-way.

While the federal government was outlining the arsenic management objectives in isolation, the Yellowknives Dene were calling for a somewhat different approach. In a

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<sup>16</sup> Media Transcripts, “Re: Giant Mine N1L2-0043, Media Tour Giant Mine to View Clean-Up Efforts,” *CJCD Radio* (March 22, 2001).

<sup>17</sup> Ibid.

<sup>18</sup> Media Transcripts, “Re: Giant Mine N1L2-0043, Update on Giant Mine Clean-Up,” *CBC Radio* (March 23, 2001).



letter dated April 8, 1999, Chief Jonas Sangris of Dettah and Chief Fred Sangris of N'dilo wrote to the Minister of Indian and Northern Affairs regarding the impending closure of Giant Mine. They called the government to confront the fact that Yellowknives Dene had never given consent for the creation of the mine and had not been consulted since:

No compensation was made to our members as a whole for the continued loss of direct and indirect revenue from the territory. The ongoing extensive damage to the social, cultural, and physical fabric of their lives and lands has never been addressed and there is an ongoing loss of their rights. Our members cannot continue to exercise their treaty and aboriginal rights as a result of the degradation of the lands and waters in and around the Yellowknives Dene traditional lands... This in our view constitutes a breach of the Crown's trust obligation to the Yellowknives Dene and its members.<sup>19</sup>

In this letter the Chiefs also acknowledged their hope that remediation plans could address legacy issues by working with the economic arm of the YKDFN, the Dettah'cho Corporation: "We wish to be involved in reclaiming this important part of our territory."<sup>20</sup> This letter represents an early call for environmental justice through recognition, community participation and capacity building. However, these calls were largely ignored, while the government focused on defining, controlling and containing the toxic material on site.

The federal government defined its responsibilities, boundaries and objectives very early on, without meaningful community participation. From day one, the federal remediation project determined what the community could comment on, and how they could become engaged. Not only did the government seek to *contain the monster*, by focusing on arsenic containment, the project *contained and defined knowledge*: what

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<sup>19</sup> Letter from YKDFN (Chief Jonas Sangris and Chief Fred Sangris) to Minister Jane Stewart, INAC, (EA0809-001: April 8, 1999), 2-3.

<sup>20</sup> Ibid., 3.

knowledge was and wasn't relevant and how the community could be involved.

Remediation objectives and boundaries were determined in isolation from the community, and then presented to stakeholders, who were expected to make informed decisions and choices without the resources or capacity to do so. Early project research culminated in Miramar's *Final Abandonment and Rehabilitation Plan* and the federal government's *Arsenic Management Alternative Report* in 2002.

### **Defining Toxicity: Arsenic Management Alternatives, Miramar's Final Abandonment and Rehabilitation Plan, and Community Consultation (2001-2007)**

#### Arsenic Management Studies (2001-2002)

In May 2001 the federal government completed its first major study of arsenic management, which would lay the groundwork for remediation planning for the next six years.<sup>21</sup> The *Study of Management Alternatives: Giant Mine Arsenic Trioxide Dust* was clearly framed as a *management* study and was intended to contribute to the overall Remediation Project Description. The study outlined the scope of potential water and environmental contamination if nothing was done and the mine was allowed to re-flood. Using this 'do nothing' approach as a baseline, the technical advisors expanded on the arsenic management approaches established in the 1997-98 workshops, outlining four main themes that represented different options: in situ management of the dust by ground freezing; extraction of the dust and reprocessing to recover high purity arsenic and gold; extraction of the dust and reprocessing to stabilize arsenic; and extraction of the dust and

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<sup>21</sup> SRK Consulting, *Study of Management Alternatives: Giant Mine Trioxide Dust*, prepared for Department of Indian Affairs and Northern Development (May 2001).

stabilization with cement. Of these options, the in situ management of the dust with ground freezing was by far the lowest cost alternative. According to the technical advisors, this alternative also posed lower risks to human and ecological health.

The federal government presented the results of this phase one arsenic study to the community stakeholders in June 2001.<sup>22</sup> The mechanisms of how the government and technical advisors had evaluated different management options were unclear to many community members who attended the June 2001 workshop; they had not been involved in determining the objectives that directed management planning. Kevin O'Reilly, a former representative of Alternatives North and City Councillor, writes that:

Beginning in 2000 there was a series of successive workshops run as consultation sessions where the federal government and its consultants presented findings and options but with very little public input in-between and little or no involvement in the development of evaluation criteria and selection of preferred alternatives. Materials were often not provided a head of time, no participant funding was provided to help parties obtain independent technical advice, and there was very little flexibility shown by the government in fully assessing new or preferred alternatives as expressed by workshop participants. In no way could this process be compared to principles of free, prior and informed consent or consultation and accommodation in terms of the federal government's fiduciary obligations to Aboriginal peoples.<sup>23</sup>

Going into the June 2001 workshop, community members were given little background information and were simply presented with the 'best options.'

Throughout the June 2001 workshop, several community members expressed their concern with how arsenic contamination, remediation and long-term care at the Giant Mine had been defined by the government project. Community members expressed

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<sup>22</sup> Terriplan Consultant Ltd., *Workshop Report: Giant Mine Underground Arsenic Trioxide Management Alternatives Workshop*, prepared for Indian and Northern Affairs Canada (Yellowknife, NWT, June 11-12, 2001).

<sup>23</sup> O'Reilly, "Liability, Legacy, and Perpetual Care," 355.

concern that none of the options offered a final, long-term solution, even though the workshop was presented as a ‘final management plan.’<sup>24</sup> They had hoped that remediation would mean removal of the arsenic. One participant questioned: “What happens when the freezing thaws? How can the land be replenished? How will the land heal?”<sup>25</sup> This question did not receive a response. Another participant then commented:

The in-situ alternative is not a final solution – at best it provides a temporary holding pattern, leaving the responsibility for final treatment to future generations. It is not a responsible act by this generation, who benefited from the gold mine, to leave a burden for future generations.<sup>26</sup>

The technical advisors responded that there was no alternative that did not leave something for future generations. To the community members participating in the workshop, this plan was about management and monitoring the arsenic, not the final remediation or restoration plan that they were expecting.

Many community members also expressed their concern about accountability: “We need a regulatory process to ensure this situation will never happen again.”<sup>27</sup> It was also suggested that, “the results of the scientific risk assessment would need to be considered by the decision makers in light of community values and the willingness to accept risk.”<sup>28</sup> This raised a discussion about values, ethics and accountability. Leaving the responsibility for future generations was considered irresponsible:

There is a need for an on-going commitment from the federal government to not only manage the arsenic through both an interim solution but to also commit to

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<sup>24</sup> Terriplan Consultant Ltd., *Workshop Report: Giant Mine Underground Arsenic Trioxide Management Alternatives Workshop*, prepared for Indian and Northern Affairs Canada (Yellowknife, NWT, June 11-12, 2001).

<sup>25</sup> Ibid., 17.

<sup>26</sup> Ibid.

<sup>27</sup> Terriplan Consultant Ltd., *Workshop Report: Giant Mine Underground Arsenic Trioxide Management Alternatives Workshop*, 18.

<sup>28</sup> Ibid., 21.

continue to aggressively research and assess technologies leading to a complete solution at some point in the future.<sup>29</sup>

Some participants countered that it would be equally irresponsible to take on extreme levels of debt in order to find a complete solution when an in-situ freezing had few risks and considerably less costs. There was a general consensus that a multi-stakeholder group should be formed to provide advice and assistance on this project. These public forum transcripts illuminate community calls to collectively determine remediation definitions, values and objectives. However, in the coming years, official reports and plans did not respond to these calls for more meaningful engagement.

While the government promoted its arsenic management plan, the Yellowknife Arsenic Soils Remediation Committee (YASRC), created in 1999 and chaired by the Canadian Public Health Association, released its three final reports to the public, concluding the work of this committee. The purpose of YASRC was to “establish a region-specific remediation level for inorganic arsenic surface contamination for Yellowknife”<sup>30</sup> in accordance with the *Canadian Soil Quality Guidelines for Inorganic Arsenic: Environmental and Human Health*.<sup>31</sup> These reports included assessments of both the human and ecological health risks posed by the arsenic contamination in Yellowknife and a report establishing the ‘natural’ or background arsenic soil concentrations in the

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<sup>29</sup> Ibid., 23.

<sup>30</sup> Canadian Public Health Association, *Yellowknife Arsenic Soil Remediation Committee Terms of Reference* (1998), 1.

<sup>31</sup> Canadian Council of Ministers of the Environment, *Canadian Soil Quality Guidelines for Inorganic Arsenic: Environmental and Human Health* (March, 1997).

area.<sup>32</sup> Risklogic Scientific Services Inc. was hired to compile these reports and relied on existing data in addition to some limited fieldwork.<sup>33</sup>

In the initial health risk assessment studies done by YASRC there was a lot of discussion of pathways, flows, and receptors. Remediation was framed as a plan to plug the flows and pathways, limiting the accessibility that receptors had to contamination:

A pathway consists of a source, a transport medium, a human exposure point and an exposure route at the point of contact. The purpose of the exposure assessment is to develop a mathematical relationship between the contaminant source concentration in each relevant medium and the projected intake of the contaminant. This relationship is then used in conjunction with the applicable toxicity information to estimate the health risk.<sup>34</sup>

Remediation was seen only as a mathematical relationship. Such an approach defined humans and animals as receptors to potential risks rather than bodies that had been subject to many risks over years of mining operations – bodies that had been defined and made by the land around them.<sup>35</sup>

The YASCR health risk assessment and background level reports were geared towards creating a threshold level, something definable and measurable in order to determine the extent of remediation needed. While establishing the background levels of arsenic was important to consider when setting initial goals for remediation, these reports focused solely on determining background levels on site and what would be numerically acceptable in regards to health risks. The background arsenic level report did not take into

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<sup>32</sup> Risklogic, *Human and Ecological Health Risk Assessments*, prepared for YASRC (2002); Risklogic, *Determining Natural or Background Arsenic Levels in Yellowknife*, prepared for YASRC (2002).

<sup>33</sup> This reporting was supplemented by research done by the Environmental Sciences Group at the Royal Military College in Kingston, where there was ongoing research on arsenic levels and contamination in the soil around Yellowknife.

<sup>34</sup> Risklogic, “Determining Natural or Background Arsenic Levels in Yellowknife,” 19.

<sup>35</sup> Linda Nash, *Inescapable Ecologies: A History of Environment, Disease and Knowledge* (Berkeley: University of California Press, 2004).

account local perceptions of risk, cultural and historical understandings of contamination, or broader definitions of healing and restoration.<sup>36</sup> In addition, continual references were made to residential, industrial and recreational remediation, without a definition of what these different levels of remediation might mean for the communities around the Giant Mine.

Following the June 2001 public consultations and the April 2002 YASRC reports, a *Final Report: Arsenic Trioxide Management Alternatives* was published by INAC in December 2002. The technical advisors noted that:

Segments of the local community have variously expressed reservations both about options that leave the dust in place and those that bring the dust to surface, the Technical Advisor recommends that at least two alternatives be taken through to public consultation. One of the alternatives carried forward should be the best in situ (“leave underground”) alternative, and one should be the best ex situ (“take it out”) alternative.<sup>37</sup>

Of the fifty-six options originally presented to manage the arsenic trioxide, the technical advisors chose two preferred options that fit with these recommendations. The Technical Advisor chose the ‘frozen block’ method as the best in situ choice and the ‘extraction and encapsulation with cement’ as the best ex situ method. The Technical Advisor stated that:

The primary role of this report is to provide a basis for a program of intensive public consultation that will assist DIAND in selecting a preferred alternative for managing the arsenic trioxide dust... both DIAND and the Technical Advisor believe that an additional type of information, namely the opinions and concerns of local stakeholders, must be understood before a final selection can be made.<sup>38</sup>

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<sup>36</sup> Risklogic, “Determining Natural or Background Arsenic Levels in Yellowknife.”

<sup>37</sup> SRK Consulting Ltd. *Final Report: Arsenic Trioxide Management Alternatives: Giant Mine*, prepared for Department of Indian Affairs and Northern Development (December 2002), 7.

<sup>38</sup> Ibid., 117.

While this report noted the importance of other ‘types of information,’ the community consultation that followed seemed to focus on convincing the community that the ‘frozen block’ method was the only feasible option.

#### Miramar’s Final Abandonment and Restoration Plan (2001)

In contrast to the arsenic management studies, surface remediation planning received almost no public attention and proceeded with little integration alongside underground management plans. Miramar’s *Final Abandonment and Restoration Plan*, published in September 2001 differed little from preceding remediation plans. It focused on removing what could be removed and containing what couldn’t. In summary, this plan aimed to “restore the mill area to a condition in which it could be reused as an industrial site and restore the remainder of the site such that it is physically and chemically stable.”<sup>39</sup> This A&R plan also relied on the vague ideas of recreating or restoring a ‘more natural’ site: “reclaimed landscape on the site should be consistent or evolve in a way consistent with the natural landscape unless there are active care-and-maintenance programs in place to manage the change.”<sup>40</sup>

The Miramar A&R plan was fundamentally flawed because it was entirely detached from the arsenic trioxide management plan and because it did not include any discussion on the values associated with community heritage or future land use. This plan was predicated on the assumption that the mine would be maintained in a dewatered state for the foreseeable future, which contradicted the options outlined in the arsenic trioxide

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<sup>39</sup> Golder Associates, *Final Abandonment and Restoration Plan*, prepared for Miramar Giant Mine Ltd. (Yellowknife, NWT, September 26, 2001) ii.

<sup>40</sup> Ibid., iii.



management study. While there were continual references to long-term maintenance and monitoring of arsenic, there was little indication of what this would actually look like. Throughout the report, the authors continually defer to the final arsenic trioxide management report without providing clear connections between the two plans.

Critiques of Miramar's remediation plan were summarized in a review of the plan published by AMEC in June 2002. According to AMEC, there were no details given about which parts of the underground mine would be abandoned and which would be kept open. Questions about long term stability of shafts, underground workings and hydrogeological issues were also not addressed.<sup>41</sup> The linkage between the A&R plan and the arsenic management plan was not articulated, making this A&R plan appear to be a work in progress, as opposed to a final plan; "Far more clarity on the issues of arsenic contamination is recommended. The plan needs to precisely denote what constitutes a contaminated situation and what does not."<sup>42</sup> This review also pointed out that many details, especially those dealing with long-term planning, appeared to conflict with the general objectives of the NWT Mine Closure Guidelines, which emphasized minimizing the need for intensive long-term care and maintenance.<sup>43</sup> AMEC also points out the absence of a proper A&R schedule as a shortcoming of the report, as there was no clear demonstration of how progressive remediation or long-term care would unfold. Nevertheless, Miramar's A&R plan was used in combination with INAC's arsenic

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<sup>41</sup> AMEC, "RE: Technical Audit of Giant Mine Abandonment and Restoration Plan, N1L2-0043" prepared for the Mackenzie Valley Land and Water Board (June 5, 2002).

<sup>42</sup> Ibid., 10.

<sup>43</sup> Northwest Territories Water Board, *Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories* (September 1990).

management studies in the development of 2007 Remediation Plan, which was accepted by the MVLWB.<sup>44</sup>

### Community Consultations (2002-2003)

After the June 2001 arsenic alternatives workshop and the publication of initial remediation research, the federal government hired Lutra Associates to survey the public's level of understanding of arsenic trioxide dust, where the gaps in knowledge were, and what people in the community thought of the arsenic at Giant Mine. This study, published in January 2002, acknowledged that many people in Yellowknife had a limited understanding of what arsenic trioxide is and how it could affect them; "The irregularity and poor presentation of information and apparent lack of willingness of industry and/or government to share information are reasons that local residents say they are not well informed or confident in their knowledge about Giant Mine or the arsenic/arsenic trioxide dust."<sup>45</sup> Lutra Associates concluded that few locals were aware of the ways that the arsenic trioxide dust was stored and managed. As a result, locals did not have adequate information to comment on preferences for long-term management of the site, but "instinctively, they feel that it should be removed now."<sup>46</sup>

The Lutra focus group study made it very clear that although locals were unaware of the details of the arsenic trioxide storage and management, they felt that the situation wasn't secure and that there were many potential risks for the community and the

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<sup>44</sup> SRK Consulting, *Giant Mine Remediation Plan*, prepared for Indian and Northern Affairs Canada, (2007).

<sup>45</sup> Lutra Associates Ltd., "Awareness testing: Findings from the Focus Groups on Giant Mine and the Arsenic Trioxide, Final Report," prepared for the Department of Indian Affairs and Northern Development (Yellowknife, January 2002), i.

<sup>46</sup> Ibid.

environment. Lutra summarized that locals “lack confidence and trust in government to manage the arsenic trioxide dust in the best interest of the public and the environment [and]... They are unsure what ‘clean up’ entails, the methods and the implications of it.”<sup>47</sup> Lutra also noted that the Yellowknives Dene First Nations had additional concerns related to compensation and economic benefits. Again, these concerns were voiced by the communities early in the remediation process, but were not taken seriously, and were not directly addressed in the *Final Arsenic Trioxide Management Alternatives Report*, published in December 2002.

Locals, the report found, continued to “feel a sense of betrayal, abandonment and resentment about the history of Giant and the arsenic.”<sup>48</sup> Feelings of stress and anxiety were also mentioned several times throughout the focus groups. Many residents questioned why the government wasn’t more transparent about the schedule for remediation: “The government doesn’t know what to do because the issue is so big,” ... “The Feds are stalling for time, looking for the cheapest solution, but is the cheapest solution the best solution?” ... “The whole issue is about money,” ... “They (government) don’t want to take responsibility to clean it (arsenic) up,” ... “They’re waiting for someone else to make a move because they don’t want to admit liability.”<sup>49</sup> Such statements make the feelings of mistrust blatantly obvious. Residents argued that DIAND had the responsibility to deal with it in an “ethical, moral and competent manner,”<sup>50</sup> but they felt that this wasn’t being achieved.

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<sup>47</sup> Ibid., ii.

<sup>48</sup> Ibid., 11..

<sup>49</sup> Ibid., 3-26.

<sup>50</sup> Ibid., 20.

Lutra recommended simplifying this situation by separating the arsenic trioxide issue from the Giant Mine issue: “This would mean that job loss, compensation, resource royalties, pensions and other ‘volatile issues’ associated with the operation of the Mine over the decades would not be a matter of discussion in the consultations.”<sup>51</sup> Although it was practical for the remediation project to focus on certain topics at certain points in time, it was unrealistic to expect to be able to separate these concerns: the arsenic issue and the Giant Mine issue are one and the same. While it seemed like the project took this advice, or had already been trying to separate these kinds of discussions, it did not provide a mechanism to deal with the other ‘volatile issues;’ they never seriously addressed compensation, royalties, and legacies at the same level as they addressed arsenic management.

The concerns raised by the Lutra report were echoed by additional research undertaken by another federal government contractor, GeoNorth Limited, who was hired to research community liaison practices across Canada and present recommendations for best practices at the Giant Mine.<sup>52</sup> During the June 2001 arsenic alternatives workshop, the need for a community liaison committee was established as one of the next steps necessary to help guide the management process. GeoNorth noted that, at the time, groups

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<sup>51</sup> Ibid., 23.

<sup>52</sup> GeoNorth Limited, *Final Report for Developing Options and Recommendations to Establish and Operate a Giant Mine Community Liaison Committee*, prepared for Giant Mine Remediation Team, Indian and Northern Affairs Canada (March, 2002). The GeoNorth report outlined examples of community committees at five other sites in Canada: the Five Island Lake Community Liaison Committee, Nova Scotia; the Joint Action Group for Environmental Cleanup of the Muggah Creek Watershed, Sydney, Nova Scotia; Trail Community Lead Task Force, Trail, British Columbia; the Independent Environmental Monitoring Agency (Ekati Diamond Mine), Yellowknife, NWT; Environmental Monitoring Advisory Board (Diavik Diamond Mine), Yellowknife, NWT.

such as the Canadian Arctic Resources Committee (CARC) and MiningWatch Canada<sup>53</sup> had documented the need for public input into the abandonment and reclamation phase of the mine: “Citing the previous failure of the Federal Government to ensure that there is zero public liability, the groups believe that the community members should be given a chance to contribute to the decision making process regarding the management plan for the Mine.”<sup>54</sup> The GeoNorth report outlined possible structures for a community oversight committee that could help to ensure more meaningful, democratic engagement in the Giant Mine Remediation Project.

After conducting interviews with community leaders, GeoNorth concluded that community objectives for a community liaison committee included the responsibility to: manage the clean-up; make information available to the public; answer the ‘how did this happen’ question; perform a real cost-benefit analysis; guide further research and development regarding arsenic trioxide; and to ensure that a ‘permanent solution’ is found.<sup>55</sup> Therefore, GeoNorth recommended that:

The mandate of the Committee includes serving as a communications bridge between government and the community, as well as advising government and the community regarding research, the future use of the Giant Mine site, reclamation options, and both underground and surface clean-up of the site. The Committee should report both to the community and to DIAND.<sup>56</sup>

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<sup>53</sup> CARC is a citizen led advocacy organization committed to the long-term social and environmental health in the Canadian North. CARC was created in response to the first Mackenzie Valley pipeline proposal <http://www.carc.org/>; MiningWatch Canada acts as a watch dog for Canadian mining companies at home and abroad <http://miningwatch.ca/>

<sup>54</sup> GeoNorth Limited, *Final Report for Developing Options and Recommendations to Establish and Operate a Giant Mine Community Liaison Committee*, 3.

<sup>55</sup> *Ibid.*, 10.

<sup>56</sup> *Ibid.*, 17.

The planned mandate of a liaison committee was to represent the community and key stakeholder groups in dialogue with DIAND. In response to GeoNorth's recommendations, the Giant Mine Community Alliance was created and included members from the Yellowknife Chamber of Commerce, the North Slave Metis Alliance, the NWT Mining Heritage Society, the City of Yellowknife, the Northern Federation of Labour, a health representative, an environmental representative and a general public representative. The Giant Mine Remediation Project Team also pushed for more community consultation, including public workshops, a display in the local mall and the creation of a website.<sup>57</sup> However, the Giant Mine Community Alliance struggled to have any meaningful role in the remediation planning process.<sup>58</sup> The YKDFN was not a sitting member, rather an observer, leading to questions of the legitimacy and power inequalities of such a committee.

Despite research done by Lutra and GeoNorth and the government's stated commitment to meaningful consultation, the focus of research and remediation remained in the technical sphere and consultation was inconsistent. After consultations were completed in 2003, little engagement occurred over the next three years before the publication of the Final Remediation Plan in 2007. By 2004 the only references to community engagement included the public registry and the link to a website. In addition, as mentioned above, the Giant Mine Community Alliance quickly went silent. At the end of the 2003 public consultations, the technical advisor again suggested that the plan for

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<sup>57</sup> Giant Mine Remediation Project Team, "Status of Giant Mine Arsenic Trioxide Project: MVLWB Briefing," submitted to the MVLWB (June 25, 2002).

<sup>58</sup> Kevin O'Reilly (MLA and former representative of Alternatives North), interview with author (May 13, 2016); Gordon Hamre (volunteer with Alternative North, former Environment Canada employee), interview with author (May 27, 2016).

freezing the arsenic underground go through an environmental assessment process.<sup>59</sup> The government decided to push ahead and avoid these regulatory procedures. In 2004, according to the Giant Mine Remediation Project, based on community feedback and the recommendations of the Technical Advisor, the GMRP received approval to move forward with the development of a project description for ground freezing as the long-term arsenic trioxide management alternative.<sup>60</sup> It was unclear if or how community feedback actually supported this decision.

#### Ongoing 'Care and Maintenance' and the Finalization of a Giant Mine Remediation Plan (2005-2007)

In March of 2005, the Giant Mine closed for good and the site was transferred entirely to INAC.<sup>61</sup> The Government of Canada and the Government of the Northwest Territories signed a cooperation agreement respecting the Giant Mine Remediation Project in March 2005.<sup>62</sup> The City of Yellowknife and the YKDFN were not given substantial roles in the negotiation of this agreement. This agreement also limited the remediation project to industrial standards, within the lease boundaries.

Several months later, in December 2005 a draft of the Giant Mine Remediation Plan was published, with supporting documentation from the Independent Peer Review

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<sup>59</sup> SRK Consulting Ltd., *Final Report: Arsenic Trioxide Management Alternatives: Giant Mine*.

<sup>60</sup> Giant Mine Remediation Project, "Arsenic Trioxide Management Project – Progress Report, First Quarter 2005," prepared for Mackenzie Valley Land and Water Board (April 29, 2005).

<sup>61</sup> Letter from Miramar to Environment Canada, "Request for Closure" (June 22, 2005).

<sup>62</sup> *Cooperation Agreement Respecting the Giant Mine Remediation Project*, between the Government of Canada, Indian Affairs and Northern Development and the Government of the Northwest Territories (March 15, 2005).

Panel (IPRP).<sup>63</sup> The Panel, made up of technical experts, unanimously supported the plan presented. The IPRP concluded that the plan would ensure long-term human and environmental health and that it was technologically sound.<sup>64</sup> There was no mention of healing historical legacies, communicating with future generations, or addressing broader community concerns about inequality, perpetual care and compensation. This is likely because the Independent Peer Review Panel included no one with expertise in Traditional Knowledge, history, community engagement or environmental justice. As with the cooperation agreement, the City of Yellowknife and the YKDFN were not given substantial roles in the review of the draft remediation plan.

In the fall of 2005, while the draft for the Remediation Plan was being finalized, with support from the GMRP, the YKDFN published *Giant Mine – Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*.<sup>65</sup> The objectives of this report were to provide information regarding the effects of the Giant Mine on the YKDFN; to help people understand the YKDFN sense of history and their viewpoints regarding the Giant Mine, and to “bring a satisfactory sense of closure to the YKDFN membership regarding the effects of the mine.”<sup>66</sup> Another important objective of this report was to begin restoring relationships:

The Giant Mine legacy is coming full circle... the Traditional Knowledge Report adds one last step; that of helping to restore relationships with the land and giving back to the lands its story, and sharing that story with Yellowknife. Part of the

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<sup>63</sup> The IPRP was created in 2002 to review the work of the Technical Advisor (SRK) and give recommendations to the Giant Mine Remediation Project Team.

<sup>64</sup> IPRP, *Giant Mine Remediation Project: Review of the “Final Draft – Giant Mine Remediation Plan,”* submitted to Indian and Northern Affairs Canada (Yellowknife, NT, December 2005).

<sup>65</sup> Yellowknives Dene First Nation Land and Environment Committee, *Giant Mine – Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*, prepared for the Department of Indian and Northern Affairs Giant Mine Remediation Project (October 13, 2005).

<sup>66</sup> *Ibid.*, 5.



restorative process provides a chronological narrative of the significant events that shaped the Yellowknives Dene view of the Giant Mine.<sup>67</sup>

The Yellowknives Dene were never consulted and did not give their consent to have this mine built on their land. According to this report, they wanted to change the relationships of the past: “Giant Mine is a story of relationships between people and the environment, and between cultures learning to co-exist.”<sup>68</sup> While this report was supported by INAC, such sentiments were not reflected in the main objectives of the final remediation plan.

Like the plans before it, the 2007 Giant Mine Final Remediation Plan’s objectives were to: manage the arsenic in a way that would minimize risks, to remediate the surface of the site to industrial guidelines, to minimize public and worker health and safety risks, to minimize the release of contaminants and to restore Baker Creek. Within these objectives, the 2007 Plan focused on twelve components: arsenic trioxide dust storage; underground mine components; open pits; waste rock, tailings; historic foreshore tailings; site waste management; Baker Creek; quarries, borrow pits and overburden piles; contaminated surficial materials; buildings and infrastructure; and waste storage and disposal areas.<sup>69</sup> Again, these objectives do not mention community engagement, historical legacies, mistrust, compensation or apology. The report did include a small section on Traditional Knowledge and a summary of public consultation and communication initiatives undertaken in the past, but it is difficult to see how or where this knowledge was actually used.<sup>70</sup>

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<sup>67</sup> Ibid., 6.

<sup>68</sup> Ibid.

<sup>69</sup> SRK Consulting, *Giant Mine Remediation Plan*.

<sup>70</sup> SRK Consulting, *Giant Mine Remediation Plan*, 1-24.

Reactions to the 2007 Remediation Plan were varied. The City of Yellowknife asked to have a Working Group set up in order to review each section of the plan with stakeholders.<sup>71</sup> The YKDFN called for a full impact review and public hearing.<sup>72</sup> The City of Yellowknife also reminded the Mackenzie Valley Land and Water Board (MVLWB) about the requirement through the NWT Waters Act for a public hearing to discuss water license updates.<sup>73</sup> While the stakeholders varied in the detail of their responses, the general consensus was that a public review should take place. Community members were concerned that the Final Remediation Plan did not adequately address perpetual care concerns, did not lay out a clear monitoring plan, included no commitment to ongoing research, no mention of independent oversight and there were issues with the definition of ‘industrial remediation standards.’ These were all concerns that had been repeatedly expressed in previous public workshops, consultations and hearings stretching back to the 1970s, yet the Project continued to consider such concerns outside of scope, without allowing the community to have input on what exactly this ‘scope’ was.

Despite these public concerns, the MVLWB issued a renewal for Giant Mine’s water license. While the license was “sent out for public review,”<sup>74</sup> there was no public hearing. The license was approved on February 20, 2008.<sup>75</sup> However, a MVLWB “Staff

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<sup>71</sup> Letter from the Office of the Mayor, City of Yellowknife, “RE: Type “A” Water License Application (MV2007L8-0031),” to the Mackenzie Valley Land and Water Board, (January 7, 2008).

<sup>72</sup> Letter from the YKDFN, “RE: Type “A” Water License Application/INAC Giant Mine Remediation to Mr. Willard Hagen, Mackenzie Valley Land and Water Board (January 18, 2008).

<sup>73</sup> Letter from the Office of the Mayor, City of Yellowknife, “RE: Type “A” Water License Application (MV2007L8-0031),” to the Mackenzie Valley Land and Water Board, (January 7, 2008).

<sup>74</sup> Mackenzie Valley Land and Water Board, “Staff Report on Giant Mine Remediation Project” (February 13, 2008), 1.

<sup>75</sup> Letter from MVLWB to Mr. William Mitchell, Manager, Giant Mine Remediation Project, “Contaminants and Remediation Directorate, INAC, MV2007-L8-0031 Not Referred to Environmental Assessment, Remediation, Giant Mine” (February 20, 2008).

Report” document from February 13, 2008, stated that the MVLWB staff had warned the Board that this application could be a cause of public concern:

Since the formation of a Giant Mine Working Group can only be developed after the Water License has been issued, it is recommended that the Board heed the concerns brought forward by the Yellowknives Dene First Nations and consider this project for Environmental Assessment based on the potential that this project might be a cause for public concern.<sup>76</sup>

The MVLWB Staff had recommended that the Board refer this project to the MVEIRB for an EA. However, ultimately, the Board decided to approve the preliminary screening of the Giant Mine Remediation Water License, and to move on through regulatory processes without referring the project to an Environmental Assessment.<sup>77</sup> The Board did agree that a Working Group should be put in to place “to address any remaining potential issues as well as to progressively discuss the implementation phases associated with the Giant Mine Remediation Plan.”<sup>78</sup>

The decision made by the MVLWB to bypass an EA was based on a technical review of the Final Remediation Plan document. In its “Reasons for Decision” document for this water license, the MVLWB stated that the Board “is unconvinced that further study of this project within an Environmental Assessment can substantiate any new information into the regulatory process... it is essential that Remediation of this site is done in a relatively prompt period of time.”<sup>79</sup> The Board stated that they had considered the “long history of communications and consultation activities undertaken.”<sup>80</sup> And yet, the question remained: despite staff recommendations to refer the project to an EA and

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<sup>76</sup> Mackenzie Valley Land and Water Board, “Staff Report on Giant Mine Remediation Project” (February 13, 2008), 7.

<sup>77</sup> MVLWB, “Preliminary Screening Report Form: Remediation, Giant Mine,” 13.

<sup>78</sup> MVLWB, “Reasons for Decision: Remediation, Giant Mine, MV2007L8-0031” (February 2008), 4.

<sup>79</sup> Ibid.

<sup>80</sup> Ibid.

continual community requests to do the same, why did the Board grant this license? As mentioned in a letter from the YKDFN to the Mackenzie Valley Land and Water Board in March 2008:

It would appear that the Land and Water Board has issued a Water License without a forum of public input and in particular without the input of the Yellowknives Dene First Nation. In our view this is a breach of the fundamental duty owed to the Yellowknives Dene First Nation and shows a complete lack of understanding on behalf of the Land and Water Board along with a complete failure of the Board to fulfill its mandate in protecting the interests of the First Nation.<sup>81</sup>

After seven years of consultation and research, community members were still asking for an environmental assessment.

#### **Trust Building, Environmental Justice and Perpetual Care: The Environmental Assessment Process (2007-2014)**

*“Listen to the people and what they want. How they envision the future. Listen to the people who were born here, who have lived here, and who use the land traditionally as part of their history and their culture. Listen to the people who will die here, and be buried here. And whose future generations will remain on the land forever.”<sup>82</sup>*  
-Chief Edward Sangris, YKDFN

On April 7, 2008 the federal government was forced into an environmental assessment after the City of Yellowknife made a mandatory referral under the Mackenzie Valley Resource Management Act, based on requests to City Council from Alternatives North, the YKDFN and a local MLA.<sup>83</sup> According to several interviewees, this was the

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<sup>81</sup> Letter from Yellowknives Dene First Nation to the Mackenzie Valley Land and Water Board, “RE: Giant Mine, MV2007L8-0031” (March 11, 2008), 1.

<sup>82</sup> Mackenzie Valley Environmental Impact Review Board, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 1 of 5” (September 10, 2012), 93.

<sup>83</sup> Letter from the Office of the Mayor, City of Yellowknife to Mackenzie Valley Environmental Impact Review Board, “RE: Contaminants and Remediation Directorate – INAC, Request for a New Type ‘A’

first time a Chief of the YKDFN had directly addressed the City Council.<sup>84</sup> A common concern for how remediation would be defined presented an opportunity to bring the community together and to begin to heal historically negative relationships:

This request for an environmental assessment represented an extraordinary convergence of interests and resistance from organizations and individuals that had not worked together effectively in the past. Ironically, these interests acted together in part because of their marginalization from the decisions making process surrounding the remediation of Giant Mine.<sup>85</sup>

This was a pivotal moment in the Giant Mine Remediation Project. Concerned citizens of Yellowknife and the YKDFN used the available regulatory mechanisms to make sure their calls for public accountability were answered.

Throughout the remainder of 2008, public scoping sessions and hearings were hosted by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) to help define the parameters for the Environmental Assessment (Fig. 4).<sup>86</sup> Important questions in the scoping sessions included: “Which additional activities not currently identified in the GMRP need to be considered inside the scope of development... [and] What are appropriate temporal (time) and geographic boundaries for the assessment of impacts during this EA?”<sup>87</sup> Again, community stakeholders identified that there were concerns about the lack of understanding about the broad temporal and geographic legacies and cumulative effects of gold mining in the area:

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Water License MV2007LB-0031, Referral to Environmental Assessment by the City of Yellowknife” (March 31, 2008).

<sup>84</sup> Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016); Todd Slack (former YKDFN employee), interview with author (May 26, 2016); Kevin O’Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016).

<sup>85</sup> O’Reilly, “Liability, Legacy, and Perpetual Care,” 358.

<sup>86</sup> See minutes on the Giant Mine Remediation Environmental Assessment Public Registry: MVERIB “Meeting Notes from the Giant Mine Remediation Project, Issues Scoping Session,” (June 17, 2008).

<sup>87</sup> Ibid.

A complete remediation on the Giant Mine site, in my mind at least, requires a ‘permanent’ solution to the arsenic problem underground as well as other areas in and outside the lease area proper... It requires that the philosophy of the remediation plan be changed to focus on how to achieve a ‘permanent solution’ and not what is economical or technically ‘feasible’ as the main criteria.<sup>88</sup>

Many other participants in these scoping hearings also made reference to impacts on local peoples’ psychology, well being and traditional practices due to the legacy of Giant Mine, and the worry associated with the unknowns of perpetual care.<sup>89</sup>

In spite of these public pleas, in setting the scope for the EA the Review Board largely limited consideration to technical questions surrounding the remediation project. It was decided that the EA would not include discussion on different options for the management of arsenic trioxide, it would be contained within the lease boundary and it would follow industrial remediation standards.<sup>90</sup> The EA only reviewed the potential for environmental impacts from the development (remediation project) itself, and did not consider historical pollution or social legacy issues as a part of this impact.<sup>91</sup>

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<sup>88</sup> Letter from Gary Vaillancourt to the Mackenzie Valley Environmental Review Board, July 22-23, 2008; similar sentiments were expressed repeatedly throughout the public hearings: MVEIRB, “Public Hearing Transcripts, Giant Mine Remediation Plan, Scoping Hearing” (July 22-23, 2008).

<sup>89</sup> MVERIB, “Public Hearing Transcripts, Giant Mine Remediation Plan: Scoping Hearing” (July 22-23, 2008). See also: Letter from Kevin O’Reilly to Tawanis Testart, Environmental Assessment Officer, Mackenzie Valley Environmental Impact Review Board, “RE: Follow-up to Giant Mine Remediation Plan Environmental Assessment Scoping Hearing” (August 8, 2008).

<sup>90</sup> Community members continued to question if this was in fact the best route for arsenic trioxide management. Throughout the public hearing for scoping, some community members made reference to remediation tactics at Con Mine, which included the use of an autoclave and were confused as to why such options could not be reviewed. See: Letter from Bruce MacLean to the Mackenzie Valley Environmental Impact Review Board (July 24, 2008).

<sup>91</sup> MVEIRB, *Reasons for Decision in the matter of the scope of development and scope of assessment for the EA of the Giant Mine Remediation Plan* (December 2008), 3.

Fig. 3. Timeline of the Giant Mine Remediation Project Environmental Assessment process

Apr 2, 2008	City of Yellowknife refers the Giant Mine Remediation Project to the MVEIRB
Jun-Jul 2008	Review Board conducts scoping sessions with stakeholders (parties)
Dec 19, 2008	Board issues reasons for decision on scope of assessment
May 12, 2009	Board releases final terms of reference and work plan for the Developers Assessment Report (DAR)
Dec 14, 2009	Developer requests extension: DAR submitted in April , 2010
May 3, 2010	Developer requests extension: DAR submitted in June 30, 2010
Jun 30, 2010	Developer requests extension: DAR delayed due to internal approvals
Oct 27, 2010	Developer submits DAR.
Nov. 5, 2010 – Feb. 17, 2012	Over the year, parties submit two rounds of information requests (IRs). The Developer requests multiple extensions. All IRs are responded to by Feb. 2012, after which a public hearing is scheduled for May 2012. <sup>92</sup>
Mar 5, 2012	Developer requests hearing delay
Mar 15, 2012	Party requests hearing delay: 60 day extension for technical reports and hearing
July 9, 2012	Technical reports submitted
Sept. 10-14, 2012	Public Hearings
Feb 7, 2013	Board issues IRs to developer
Mar 8, 2013	Developer requests extension for IR responses
Mar 14, 2013	Developer submits IR responses.
Mar 24, 2013	Parties respond to IRs.
Jun 20, 2013	Board releases Report of EA Minister initiates consultation to proposed modifications of measures.
Dec 23, 2013	Board holds consult-to modify meeting.
Jan 20, 2014	Final "Reasons for Decisions and Measures" Report
June 9, 2015	Signing of the Environmental Agreement.

<sup>92</sup> For a detailed timeline of all the information requests, responses and technical meetings, see the public registry for the Giant Mine Remediation Environmental Assessment:  
[http://www.reviewboard.ca/registry/project.php?project\\_id=69](http://www.reviewboard.ca/registry/project.php?project_id=69)

In its Reasons for Decision document regarding the scope of the EA, the Review Board stated it had not heard “any new evidence which convinced the Board that the investigation of alternatives to the frozen block method should be reinitiated.”<sup>93</sup> Therefore, the Review Board was not persuaded that it should “include an assessment of arsenic treatment alternatives in the EA.”<sup>94</sup> In regards to off-lease contamination, the Board reasoned that: “the activities that led to the deposition of arsenic in locations away from the Giant Mine are not related to the activities proposed by the developer of this project, namely INAC. Also, the effects of these historical activities are not a component of the proposed development.”<sup>95</sup> Based on information from the Project Team that remediation and freezing would be completed in 10 years, with 5 years of monitoring, the Review Boards decided to “focus its considerations on the impacts of this development on the first 15 years of its operation, or until the site is expected to reach the anticipated state of stability.”<sup>96</sup> Finally, in regards to remediation standards and future land uses, the MVEIRB stated:

The remediation standard chosen is intended to improve physical conditions at the Giant Mine site. The standard of remediation is a matter of choice for the land owner, which is the GNWT. As a result, the Review Board has determined that the EA will not focus on the standard of remediation chosen.<sup>97</sup>

Time and time again community members defined what they saw as important objectives for the remediation project, and time and time again various governments and regulators told them that these concerns were ‘out of scope.’

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<sup>93</sup> Ibid., 6.

<sup>94</sup> Ibid.

<sup>95</sup> Ibid., 7.

<sup>96</sup> Ibid., 8.

<sup>97</sup> Ibid., 10.



Following the scoping sessions, the MVEIRB published Terms of Reference and a Work Plan for the Giant Mine Remediation Plan on May 12, 2009.<sup>98</sup> These documents directed the development of the GMRPT's Developers Assessment Report, which was published in October 2010.<sup>99</sup> According to many interviewees who participated in the EA, the government seemed unprepared to submit this document, which took an extra year to complete.<sup>100</sup> The following two years of information requests, responses to these requests, and technical reports, culminated in the Giant Mine Remediation Public Hearings in September 2012. Until the public hearings, community stakeholders had received no funding to participate in scoping sessions or to organize independent research.<sup>101</sup> Finally, in preparation for the public hearings, Alternatives North, the YKDFN and the NSMA received joint funding to support their participation in the public hearing process.<sup>102</sup>

### The Giant Mine Remediation Environmental Assessment Public Hearings

It was the public hearings that really allowed community participants to challenge technical definitions of remediation and to drive home the importance of long standing

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<sup>98</sup> MVEIRB, *Terms of References for the Environmental Assessment of the Indian and Northern Affairs Giant Mine Remediation Plan*, (EA0809-001: May 12, 2009); MVEIRB, *Workplan for the Environmental Assessment of the Indian and Northern Affairs Giant Mine Remediation Plan* (EA0809-001: May 12, 2009)

<sup>99</sup> Indian and Northern Affairs Canada and the Government of the Northwest Territories, *Developer's Assessment Report* (EA0809-001: October 2010).

<sup>100</sup> MVEIRB, *Workplan for the Environmental Assessment*; David Livingstone (former INAC employee, GMOB Director) interview with author (May 13, 2016); Alan Erlich (Director of the MVEIRB) interview with author (June 2, 2016).

<sup>101</sup> As mentioned in the first scoping session meeting on June 17, 2008: "Review Board staff stated that currently there is no capacity to give out participant funding, but noted that it is an issues that is raised each year during negotiations between INAC and the Review Board. Review Board staff acknowledged that it is difficult for people to participate in EAs without financial assistance and affirmed that a response in writing to this concern would be sent soon."

<sup>102</sup> O'Reilly, "Liability, Legacy, and Perpetual Care."

issues of legacy, independent oversight, and perpetual care.<sup>103</sup> The hearings stretched over five days in September 2012 and included presentations from the government project team, technical advisors, stakeholders and general community members.

At many points throughout the hearings it seemed as if the stakeholders and the Developer were talking about very different projects. All participants agreed that the site needed to be cleaned-up, managed, monitored and cared for, and most even agreed that the frozen block method was the most effective, in-term solution. However, going into the hearings there was no foundation, or common objectives for how remediation would be defined, how the community should be involved in deciding future land uses, and how perpetual care would be approached. First, the definition or ‘scope’ of the Environmental Assessment, and in turn, the definition of the remediation project itself was a continual source of contention amongst hearing participants. Second, negotiations for independent oversight had been stalled by the Project, which influenced some stakeholders’ trust in the EA process and the GMRP. Third, concerns for perpetual care and ongoing research were continually pushed aside as ‘out of scope.’ Finally, discussions on apology, compensation and reconciliation alongside remediation were entirely overlooked.

The government project team continually referenced the ‘scope’ of environmental assessment to limit the extent of government responsibility. The major point of disconnect came from the Project Team’s insistence that the Remediation Project posed no risks. According to Joanna Ankersmit, the Director of CARD, remediation as containment was inherently good because it would fix the site:

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<sup>103</sup> For a full review of the public hearing transcripts and other documents from the public hearings, see the Mackenzie Valley Environmental Impact Review Board’s public registry for the Giant Mine Remediation Environmental Assessment: [http://www.reviewboard.ca/registry/project.php?project\\_id=69](http://www.reviewboard.ca/registry/project.php?project_id=69)

Currently the Giant Mine poses risk to humans and the environment. By comparison, the remediation plan poses no significant environmental impacts. By improving the entire site, in terms of environmental and human health and safety, it is clear this remediation plan offers significant positive results.<sup>104</sup>

However, in the eyes of many community members, this ‘scope’ of the environmental assessment went beyond the material acts of remediation; it was about discussing community-based remediation objectives and acknowledging responsibility for decades of pollution, contamination, and injustice. As Todd Slack stated:

We have a certain amount of faith in the position that they’ve adopted. However, this position was not based on objectives or goals as defined by the Yellowknives Dene... Right from the get-go, there was a disconnect between what they decided to do and what the Yellowknives wanted to see... assurances have not been forthcoming, and thus we’re forced to turn these issues over to the Board rather than arriving at a collaborative endpoint.<sup>105</sup>

Even after community stakeholders continually outlined why remediation was a public concern, these concerns were again and again considered to be ‘out of scope’ in government responses, as the government again focused on technical clean up.

While the EA and public hearings were ongoing, certain aspects of the Remediation Project were considered separately as a part of a Site Stabilization Plan,<sup>106</sup> which was not open to public comment and community members were given little information on it.<sup>107</sup> This plan outlined general maintenance of the site and included stabilization plans for ‘emergency measures’ such as taking down decaying structures.

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<sup>104</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 1 of 5” (Yellowknife: September 10, 2012), 24.

<sup>105</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife: September 12, 2012), 167.

<sup>106</sup> See emails between Adrian Paradis and Kathleen Graham, Mackenzie Valley Land and Water Board, “RE: Giant Mine Activities for Site Stability for Discussion,” posted to the MVLWB public registry (MV2007L8-0031: February 28, 2012).

<sup>107</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife: September 12, 2012), 50.

Throughout the public hearings, several stakeholders critiqued the separation between remediation and ‘care and maintenance.’<sup>108</sup> Kevin O’Reilly argued that Alternatives North “does not object to any legitimate work that needs to be done at the site on an emergency basis as long as it’s communicated clearly to the public.”<sup>109</sup> O’Reilly raised concerns that the Site Stabilization Plan was about “fast tracking a lot of this work while the environmental assessment was going on and under – in my opinion, undermining your authority as a Review Board and this process.”<sup>110</sup> Again, the parameters of what was included in ‘scope’ of the Remediation Project and the EA were continually debated throughout the public hearings.

Stemming from a lack of common understanding, the need for independent oversight continued to be a point of contention throughout the EA public hearings. Leading up to the public hearings, the Giant Mine Remediation Project and the community stakeholders had been negotiating independent oversight.<sup>111</sup> Ultimately, before the public hearings, the government dropped out of this process. This incident highlighted a hidden disconnection between the local Project Team and government in Ottawa. While local government employees saw the need for community oversight, Ottawa was unwilling to implement this unless the EA forced it.<sup>112</sup> Todd Slack and Kevin

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<sup>108</sup> See public hearing presentations on surface remediation from Alternatives North, NSMA, YKDFN; MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife: September 12, 2012).

<sup>109</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife: September 12, 2012), 202-203

<sup>110</sup> Ibid.

<sup>111</sup> Kevin O’Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016); Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016). Todd Slack (former YKDFN employee), interview with author (May 26, 2016); David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016).

<sup>112</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

O'Reilly reflected that they felt led on by these negotiations; for them, the government dropping out of negotiations for independent oversight drastically changed the tenor of the public hearings.<sup>113</sup> Community stakeholders had no way to hold the government accountable for promises or to independently track remediation progress. They were afraid that the government, with vague mentions of commitments to engagement and perpetual care, could easily disregard these promises at the end of the day.<sup>114</sup>

Many community members, including the YKDFN and North Slave Métis, repeatedly demanded that independent oversight be included in binding EA Measures.<sup>115</sup> But when concerns about independent oversight were raised in the public hearings, the government focused on the role that the Giant Mine Community Alliance could play in the future as some form of oversight. However, Bob Bromely, a local MLA, who had been involved in the Community Alliance, stated, "I became disillusioned with the lack of commitment from the proponent/regulators to public oversight. And in protest on this issue, I declined further participation on the coalition, but alas, for little result."<sup>116</sup>

Another MLA, Wendy Bisaro added to this sentiment:

Communication is another area of concern for me. I believe the Developer has addressed this in presentations, but I feel little comfort in their plans. Describing the Giant Mine Alliance as a successful communication tool is not correct... I see little from the Alliance. I don't feel it has a good track record to date and I don't have any expectations that it will improve.<sup>117</sup>

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<sup>113</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016); Kevin O'Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016).

<sup>114</sup> MVEIRB, "Giant Mine Remediation Project Environmental Assessment Hearing, Part 1 of 5" (Yellowknife: September 10, 2012), 47.

<sup>115</sup> Ibid., 96-98.

<sup>116</sup> MVEIRB, "Giant Mine Remediation Project Environmental Assessment Hearing, Part 2 of 5" (Yellowknife: September 11, 2012), 370.

<sup>117</sup> Ibid., 378.

Stakeholders, including Alternatives North, the YKDFN, NSMA and the City of Yellowknife were adamant that some kind of independent oversight would be necessary to ensure meaningful engagement, to provide a structure for ongoing research and communication and to ensure that the Project Team would be held accountable.

Community stakeholders, particularly City of Yellowknife representatives, also repeatedly expressed their concerns about a lack of planning for future land use. Jeff Humble, a City of Yellowknife planner, stated: “It’s the City’s position that a land use plan was part, or should have been part, of the remediation plans. And here we are, at the end of a twelve-year process, and only now is this issue coming to the surface... I’ve been a planner for more than ten years, and I’ve never seen a land use plan come at the tail end of a process.”<sup>118</sup> The lack of future land use planning is also connected to perpetual care and long-term management, which was a focal point of the public hearings, including presentations from all stakeholders on their perceptions of perpetual care over the fourth and fifth day of the hearings.<sup>119</sup> Alternatives North had also contracted a report from Joan Kuyek, entitled, “The Theory and Practice of Perpetual Care of Contaminated Sites,” which outlined examples of other perpetual care sites.<sup>120</sup> The developer did propose a vision of perpetual care that included “building a positive value into a closed mine” and are committed to working together with the stakeholders in the future to figure

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<sup>118</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife: September 12, 2012), 44.

<sup>119</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 4 of 5” (Yellowknife: September 13, 2012); MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 5 of 5” (Yellowknife: September 14, 2012).

<sup>120</sup> Joan Kuyek, “The Theory and Practice of Perpetual Care of Contaminated Sites,” Alternatives North submission to the Mackenzie Valley Environmental Impact Review Board (July 2011).

out the best way to design a comprehensive perpetual care plan.<sup>121</sup> However, community stakeholders did not trust these vague promises and wanted a binding measure to ensure perpetual care planning would happen and that long-term funding would be secured. Suggestions for perpetual care included discussions on cultural perceptions of time, building a database or library with records, developing specific land regulations, ensuring consistent funding and communicating with future generations. The developer continually stated that there is time to figure these things out and their concern is to first get the site stabilized, but as Todd Slack points out:

Considering the project has had thirteen years and the Baker Creek remediation plan is not in place, and there's no real ETA attached to that, what language would the proponent find acceptable for a binding measure to ensure that the transition and perpetual care plans are going to be completed within an appropriate schedule?<sup>122</sup>

Dr. Ian Gilchrist, a former Chief Medical Officer of Health and member of the NWT Water Board stated:

It sounds to me like a good thing, the perpetual care of the Giant site. I would suggest that that title, that topic, needs to be accompanied by another one, which is: *perpetual caring, perpetual caring for people*. And I think it leads you to go beyond some of the very physical, technical stuff that we have seen here.<sup>123</sup>

Again and again, the community stakeholders pushed for binding measures regarding a perpetual care plan that would care for the community and the land.

Throughout the public hearings, there was a continual disconnect between what the Project Team was presenting and what the community stakeholders were asking for.

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<sup>121</sup> MVEIRB, "Giant Mine Remediation Project Environmental Assessment Hearing, Part 4 of 5" (Yellowknife: September 13, 2012), 82.

<sup>122</sup> Ibid., 125.

<sup>123</sup> Emphasis added, MVEIRB, "Giant Mine Remediation Project Environmental Assessment Hearing, Part 5 of 5" (Yellowknife: September 13, 2012), 37.

Community stakeholders understood that the frozen block method was the best option at the time and there was general acceptance that the site was being monitored and that good science was being done. However, this was not the issue; to many community participants, remediation was about accountability, independent oversight, and ensuring responsibility long into the future:

On the one side you have the engineering/physical work side of the project. We think they've done most of the reasonably well. There's still some concerns. But on the human and social side, apology and compensation, we don't have that. Local political support for the project, not there. Ongoing research and development, not there. Independent oversight, not there. Long-term funding arrangements, not in place. Full disclosure of information and records, not there. No thoughts about site designation, land use controls. No comprehensive perpetual care plan. No environmental agreement. And finally, no social license or contract for this project to proceed.<sup>124</sup>

Even if every community member was not outwardly expressing their concern loudly at the hearings, looking back, interviewees remembered feelings of stress and anxiety:

“psychologically when you live next to something that's there all the time... it weighs in the back of your mind but you still have to go about your life and so you don't act like you're expecting it to go off at any second, but it doesn't mean that it's not in your mind... at a conscience or at least subconscious level.”<sup>125</sup> Person after person stood up to question the project team and the board, through “pouring thunderstorms and power failures... there were reasons why the board reached its conclusions about widespread public anxiety.”<sup>126</sup>

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<sup>124</sup> MVEIRB “Giant Mine Remediation Project Environmental Assessment Hearing, Part 1 of 5” (Yellowknife, September 10, 2012) 113-114.

<sup>125</sup> Alan Erlich (Director, Mackenzie Valley Environmental Impact Review Board), interview with author (June 2, 2016).

<sup>126</sup> Ibid.



The public hearings revealed the incredible lack of trust in the government-lead remediation process. Instead of listening, and putting in place mechanisms to develop trust, the project stuck to their project mandate without compromise. Randy Freeman, an employee of the YKDFN Lands and Environment Department stated, “This is a matter of trust. When we hear statements like, we’re developing this information, or... that the project is exploring the issue or that research is required, what we hear is that our concerns are not and will not be addressed.”<sup>127</sup> Time and time again, Joanna Ankersmit, the Director of CARD, stated that she did not see any need for substantial community concern. Even at the end of day five of public hearings, after hearing long lists of concerns, questions and fears from community members, when questioned, the Director of CARD refused to acknowledge the public concern.<sup>128</sup> What became obvious was that the local project team did not have the authority or resources to facilitate public concerns and that the federal government had been dragged through this process with little good will. While community concerns were not openly addressed in the scoping documents or in the DAR, the public hearings did result in a Reasons for Decision document that was, to some, quite shocking, and quite different from any remediation documents before it.

### The Giant Mine Remediation Report of Environmental Assessment

The community directed EA process resulted in a Board decision that was quite different from the initial decision to bypass an environmental assessment. *The Report of*

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<sup>127</sup> MVEIRB “Giant Mine Remediation Project Environmental Assessment Hearing, Part 3 of 5” (Yellowknife, September 12, 2012), 165.

<sup>128</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 5 of 5” (Yellowknife, September 14, 2012); Todd Slack (former YKDFN employee), interview with the author (May 26, 2016).

*Environmental Assessment and Reasons for Decision*, published on June 20<sup>th</sup>, 2013 outlined a vision of remediation that would drastically alter how the project was approached over the coming years. This report concluded, against the Project Team's many arguments, that the remediation project was "likely to cause significant adverse impacts on the environment, including cumulative impacts arising from the potential effects of the Project in combination with the effects of past activities."<sup>129</sup> Referencing Chief Sangris, the Review Board stated that, "the concerns expressed related directly to project-specific and cumulative aspects of the proposed Project... the YKDFN view both the historical contamination and the proposed clean-up as separate wrongs."<sup>130</sup> The Review Board rejected the Project Team's argument that community concerns were linked to historical mining, and therefore were not within the mandate of the remediation project. However, the Report of EA (REA) failed to provide any guidance on ways to address calls for apologies and compensation regarding historical legacies. According to the Review Board, "there is an apparent gap between the Developer's view of community concerns and of the actual concerns expressed by community residents."<sup>131</sup>

The REA outlined twenty-six measures that, if approved by territorial and federal ministers, would be legally binding. These measures addressed the majority of concerns raised over the four years of environmental assessment, including perpetual care (Measures 1 and 2 and Suggestion 4), ongoing research (Measure 3 and 4), funding (Measure 3, 5 and 7 and Suggestion 5), independent oversight (Measure 3, 7 and 8 and

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<sup>129</sup> Mackenzie Valley Review Board, *Report of Environmental Assessment and Reasons for Decision: Giant Mine Remediation Project* (EA0809-001: June 20, 2013), i.

<sup>130</sup> Ibid., 27.

<sup>131</sup> Ibid., 30.

Suggestion 6), health effects on people (Measure 5, 9 and 10 and Suggestion 7 and 8), Baker Creek (Measure 11 and Suggestion 9), water quality and the diffuser (Measure 12-17, Suggestion 10), management of underground arsenic by ground freezing (Measure 18, 19), surface reclamation (Measures 20-26, Suggestions 11-15), traditional land use (Suggestion 16), community engagement (Suggestion 1), and communicating with future generations (Suggestions 2 and 3).<sup>132</sup> The Review Board did not recommend any binding measures specifically addressing traditional land use, community engagement or communicating with future generations, but these themes appeared throughout measures directed at perpetual care, oversight, health effects, and consultation for surface design. The Report of EA (REA) also shifted the timeframe of the project; the frozen block method was framed as an interim solution rather than a final solution. According to the Review Board, limiting the project to 100 years would “facilitate ongoing research in emerging technologies towards finding a permanent solution.”<sup>133</sup>

Over the following year, stakeholder parties and the project team submitted comments on this Report to the MVEIRB and federal ministers. Most parties, including the YKDFN, Alternatives North, the NSMA, the City of Yellowknife and local MLAs expressed their desire to have the binding measures accepted and implemented as soon as possible.<sup>134</sup> According to the YKDFN:

Comparing the initial Project proposal and the Measures and Suggestions from the Board, we feel that the deficiencies of the proposal have been remedied. It is imperative that the Crown implement the Suggestions provided in the REA to

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<sup>132</sup> Mackenzie Valley Review Board, *Report of Environmental Assessment and Reasons for Decision: Giant Mine Remediation Project*.

<sup>133</sup> Ibid., i.

<sup>134</sup> See several letters from the YKDFN, Alternatives North, NSMA, the City of Yellowknife and local MLAs on the Giant Mine Remediation Environmental Assessment Registry, filed between August 2013 and November 2013 under Post-Report Materials.

address all of the YKDFN's concerns... YKDFN views implementation of the Suggestions as instrumental to satisfying the Crown's duties.<sup>135</sup>

In an earlier letter to the relevant federal ministers, the YKDFN also stated that:

We know that there are many people within your organization that will want to excise portions of the decision. However, we ask that you keep the decision as is – it gives us a good path forward and will provide a site that is of use to the people who live here. This path forward takes one of the greatest environmental disasters and creates conditions that will let us turn it into a site that provides great opportunity and benefit for future generations.<sup>136</sup>

The Project Team on the other hand, submitted a letter that expressed their disagreement with the Report of Environmental Assessment: “We have concluded that the potential impacts of the Review Board’s recommendations are significant with respect to each of the project scope, schedule and cost.”<sup>137</sup> The Project Team’s first major concern expressed in this letter was a delay in the project due to the requirement to fulfill some measures before application for a water license. They stated that: “the first impact is that a delay leaves in place a dangerous and deteriorating status quo that will expose the community and the environment to continued or increased risk.”<sup>138</sup> They also rejected the requirement for an environmental agreement, as outlined in Measure 7:

A distinct issue with recommended Measure 7 is that it essentially hands each of the members of the Oversight Working Group a veto of the commencement of ‘major project activities’. The recommended measure would do so by making successful conclusion of negotiations of the agreement with (at a minimum) all the

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<sup>135</sup> Letter from the YKDFN to Matt Spence, Director General of the Northern Projects Management Office. “RE: Invitation to Provide Comments on the Giant Report of EA” (August 15, 2013).

<sup>136</sup> Letter from Chief Edward Sangris, Yellowknives Dene First Nation (Dettah) to Bernard Valcourt, Minister of Aboriginal Affairs and Northern Development, Gail Shea, Minister of Fisheries and Oceans, Leona Aglukkaq, Minister of Environment and Michael Miltenburger, GNWT Environment and Natural Resources, “RE: Giant Mine Report of Environmental Assessment” (August 2, 2013).

<sup>137</sup> Letter from Joanna Ankersmit, Executive Director of the Contaminated Sites Program, Aboriginal Affairs and Northern Development and Ray Case, Assistant Deputy Minister, Corporate and Strategic Planning, GNWT to Mr. Matthew Spence, Director General, Northern Projects Management Office, Canadian Northern Economic Development Agency, “RE: Proponent’s Response to Correspondence in the Report of Environmental Assessment of the Giant Mine Remediation Project” (November 1, 2013), 3.

<sup>138</sup> Ibid., 4.

members of the Oversight Board a condition precedent to major Project activities. This would create a wholly unbalanced negotiation environment. For every negotiation point, the Project Team (ultimately the Crown) would be forced to choose between conceding the point or delaying the Project. As a result, recommended Measure 7 would be problematic for timely decisions making, particularly decisions related to addressing urgent risks.<sup>139</sup>

The Project Team's response to the EA report caused a lot of frustration amongst community stakeholders, who regarded the environmental agreement as a basis for building community trust in the project.<sup>140</sup> According to one local MLA, Bob Bromley, the Project team rejected "any need for an environmental agreement or independent oversight." He goes on to state that, "City council, the Yellowknives Dene, the NWT Legislative Assembly, unions, church groups and private citizens all came out and said support this, implement it... Now the project team says, 'trust us, we don't need to implement these requirements.'"<sup>141</sup> As Mr. Bromley points out, without these requirements the project would have no community trust going forward.

Despite the public concern that was recorded by the Land and Water Board in 2007, despite the ongoing grievances and stories shared by passionate and committed community members throughout the EA process, and despite the final report of EA that supported these concerns, the government project continued to reject community concerns. After a year of further correspondence, the measures outlined in the REA were modified slightly by the Minister of Aboriginal Affairs and Northern Development in correspondence with the community stakeholders and the project, but in the end, were

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<sup>139</sup> Ibid., 7.

<sup>140</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016); David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016).

<sup>141</sup> Mr. Bob Bromley, Weledeh MLA, "Unedited Hansard: Member's Statement on Giant Mine Project Team Response to Environmental Assessment" (GNWT Legislative Assembly: Nov. 4, 2013), 1.

approved and implemented in August 2014.<sup>142</sup> At this point, the Project was forced into an environmental agreement. This was a watershed moment for community stakeholders. However, they had to fight to get there and many still find it hard to trust a project that was forced into an agreement in the first place.

## **Conclusion**

The Environmental Assessment represented a turning point in the Giant Mine Remediation process and has empowered the community to have a stronger voice in how remediation is carried out. The issues raised throughout the Environmental Assessment and formalized in the Environmental Agreement were a culmination of over a decade of debate on how to contain the Giant Mine Monster. Initial agreements made between the federal government, the GNWT and Miramar were not open to community consultation and the resulting arsenic and surface remediation research was defined in isolation from community concerns. The studies and planning done by INAC, SRK, YASRC and Miramar between 1999-2007 presented remediation as a specific measurement goal, something that could be quantifiably attained and then put aside: a checklist of ‘acceptable’ toxic thresholds based on mathematically determined potential risks rather than on a discussion of what the community itself deemed ‘acceptable.’ Such a threshold

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<sup>142</sup> Modifications included the use of the term ‘Oversight Body’ for independent oversight, and the clarification that rerouting Baker Creek would need further research and would not be mandatory. In order to ensure negotiations for an Oversight Body did not get prolonged, the revisions also included a six-month deadline for a draft of an agreement. This did reflect some of the concerns expressed by the Project Team. However, the major points of community concern were kept in the final approval of wording for the measures. A chart of all final wordings for the approved measures can be found in the Letter from Bernard Valcourt, Minister of Aboriginal Affairs and Northern Development to Ms. JoAnne Deneron, Chairperson of the Mackenzie Valley Environmental Impact Review Board (August 11, 2014).

management approach did not account for the social and political effects of mining – the social ‘waste’ or ‘debris’ was not included.

The community was not involved in defining remediation objectives or the borders of contamination, and therefore did not have a say in what space was ‘worth’ being remediated or how remediation would progress. There was no public discussion of how off-site contamination would be managed. In addition, Miramar’s surface remediation plan was separated from arsenic management plans and there was no public forum provided for discussions on surface design, future land use or long-term care and maintenance. All community consultations focused on educating the public about what was the best option for managing underground arsenic on site. In this sense, the Giant Mine Remediation Project *contained* knowledge about remediation to technical definitions of arsenic management within the lease site.

Throughout the early years of research, consultation and remediation planning, the Project Team was also dealing with a materially complex and dynamic site; decisions had to be made in order to ensure safety. While the arsenic trioxide management studies defined the final remediation plan, everything else was relegated to ‘care and maintenance’ or ‘stabilization’ plans. Only certain aspects of remediation, such as arsenic management, were presented to the public. And even these discussions were limited to two technical options. Quarterly reports and applications for water license renewals report a lot of ongoing repair, maintenance and care of the site.<sup>143</sup> The government, perhaps unintentionally, used the ‘care and maintenance’ or ‘emergency actions’ guise to

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<sup>143</sup> See the Giant Mine Remediation Project, “Arsenic Trioxide Management Project- Progress Report,” submitted to the Mackenzie Valley Land and Water Board between 2001-2005. These were quarterly reports submitted to the MVLWB under the water license N1L2-0043.

implement certain management practices and ‘ongoing remediation’ without consulting the community before the publication of the final remediation plan. These day-to-day actions and care plans were not considered in public presentations or planning documents.

The Lutra and GeoNorth studies done in 2002 and community workshops throughout 2002-2003 show community members’ desire for recognition, participation and capabilities within the remediation planning process. More specifically, community members expressed a desire for independent oversight and a say in how remediation would be defined. However, initial community consultations were limited to one-way presentations and despite the GMRP’s stated commitment to community engagement, information was again limited to the technical management of underground arsenic trioxide. The creation of the Giant Mine Community Alliance also failed to provide any kind of meaningful independent oversight. After 2003, communications and engagements went relatively dark. While these early community engagement processes did provide some level of communication, they failed to gain the trust of the community because stakeholders had not been involved in setting remediation objectives from day one.

The lack of discussion about what remediation was, what actions it would include and how it would be connected to day-to-day and long-term care and maintenance led to a disconnected Final Remediation Plan that overlooked the links between the large arsenic containment project, the more general surface remediation and design, and the long term, ongoing care of the site. Despite recommendations from technical advisors, the Land and Water Board staff, the YKDFN and other community stakeholders to put the 2007 Remediation Plan through an environmental assessment, the Land and Water Board approved the plan for licensing. Again, this decision was based on a technical assessment



of the plan and assumed that since the frozen block method was the best available method, it was the only way forward. This decision did not take into account community stakeholders' opinions on the morals and values of remediation or their concerns about future land uses, independent oversight or perpetual care. In seeking to contain the underground arsenic monster, the GMRP sidelined what the community considered to be important 'matters of concern' and 'matters of care;' all of the opinions involved in the Giant Mine Remediation Project were not considered equally.

Many Yellowknife city citizens and the YKDFN did not feel that the 2007 Remediation Plan would keep their community safe for generations to come. The cumulative human and ecological health risks due to historical, present and future exposures, along with the effects of stress, marginalization, and injustice could not be easily measured, charted or placed in formulas. The technical information presented could not be translated into everyday effects and everyday practices of repair, restoration and care over the long term. The realities of this complex site and the potential for slow violence and perpetual care that it presented were not communicated or discussed in a meaningful way through initial planning processes, resulting in the marginalization of the voices most affected. When the community stakeholders forced the GMRP into an environmental assessment, they were not simply rejecting the frozen block arsenic management alternative, rather, they were also rejecting the way in which that plan was reached.

Typically, an environmental assessment is not thought of as a social trust building process, but rather a technical, risk assessment process. Environmental assessments are set up to assess the potential risks that a development might pose to environmental and

human health; they are not necessarily social assessments.<sup>144</sup> It is not necessarily set up to address independent oversight, off-site contamination, historical legacies or reconciliation. At the beginning of the Giant Mine Environmental Assessment, the scope of the Project was again limited to the remediation project to on-site contamination. It did not look at alternatives to the frozen block method and it did not directly address the legacy of the Giant Mine. In addition, environmental assessments are a difficult process to navigate and stakeholders initially received no funding to participate: “Yellowknives [Dene] aren’t keen on the Land and Water Board system, but if they don’t navigate there then they don’t have a say.”<sup>145</sup> However, through the public hearings specifically, community stakeholders used the EA platform to begin redefining remediation as something that should be based on community engagement and should include independent oversight,

Community concerns finally began to be addressed in the Reasons for Decisions document published by the MVEIRB and the resulting Environmental Agreement. And while the remediation project is still limited to on-site contamination and the frozen block method, the Environmental Agreement sets in place structures for continued community engagement, meaningful independent oversight and ongoing research for better remediation alternatives in the future. Another important result of the EA is the shift from thinking about the frozen block as the best solution (and possibly the final solution), to

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<sup>144</sup> Patricia Fitzpatrick, A. John Sinclair, and Bruce Mitchell, “Environmental Impact Assessment Under the Mackenzie Valley Resource Management Act: Deliberative Democracy in Canada’s North?” *Environmental Management* 42 (2008): 1-18; Stephen Ellis, “Meaningful Consideration? A Review of Traditional Knowledge in Environmental Decision Making,” *Arctic* 58, no. 1 (2005): 66-77; Derek R. Armitage, “Collaborative environmental assessment in the Northwest Territories, Canada,” *Environmental Impact Assessment Review* 25 (2005): 239-258.

<sup>145</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016).

thinking about this as an interim solution – the temporality of the project shifted. Most importantly, this change emphasized the ongoing *process* of remediation and perpetual care. It is not an end point or end solution, but rather a continual process of monitoring, maintenance, experimentation, tinkering, negotiation, and research.

## CHAPTER 5

### CONFRONTING AND CARING FOR THE GIANT MINE MONSTER

*“These stories are still alive and there’s never been an inquiry. There’s never been a commission, investigation, nothing. To our people that’s... like a homicide; who done it and why it happened, unanswered questions still today. We’re still thinking about it. It never goes away. Now our children and grandchildren are going to hear about those stories as well because we’ve written it. We’ve written about it and we tell stories about it.”<sup>1</sup> – Fred Sangris, Former Chief of the YKDFN*

#### Introduction

After seven intense negotiation sessions over six months, on June 9, 2015, the Giant Mine Remediation Project Environmental Agreement was signed by six stakeholder groups: the YKDFN, the North Slave Métis Alliance, Alternatives North, the City of Yellowknife, the Government of the Northwest Territories and the Government of Canada. This agreement marked a major milestone in the story of remediation at Giant Mine. As the first environmental agreement to be signed for the remediation of an abandoned mine, this agreement has the potential to influence future remediation projects across Canada. The Giant Mine Environmental Agreement was modelled after the environmental agreements signed for the development of diamond mines in the Northwest Territories, which established independent oversight boards and environmental monitoring programs.<sup>2</sup> Following a commissioned report on independent oversight

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<sup>1</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 1 of 5,” (Yellowknife, September 10, 2012), 247-248.

<sup>2</sup> William Couch, “Strategic resolution of policy, environmental and socio-economic impacts in Canadian Arctic diamond mining: BHP’s NWT diamond project,” *Impact Assessment and Project Appraisal* 20, no.4 (2002): 265-278. For more information on the development and signing of the environmental agreements for diamond mines in the NWT, see Ellen Bielawski’s, *Rogue Diamonds*, 2003. The Environmental Agreements at Ekati and Diavik were signed in 1997 and 2000 respectively, setting a new standard for independent oversight, environmental agreements and impact benefit agreements between local communities and resource developments in the NWT. During the set up of these committees, the

completed for the Environmental Assessment in 2011, the parties to the Agreement sought to develop an oversight board and reporting structure that created and preserved public trust in the Remediation Project.<sup>3</sup>

In addition to the creation of an oversight board, funded by the Government of Canada, the Giant Mine Environmental Agreement provides a structure for the development of a coordinated, collaborative approach to the Review Board Measures, including an extensive public reporting structure.<sup>4</sup> Objectives outlined in the Environmental Agreement include: protection of the environment and the way of life of Aboriginal peoples and other residents, the elimination or mitigation of risks, an integrated eco-system approach to monitoring and management, the minimization of perpetual care requirements, effective communications with future generations, and meaningful participation of the public in the implementation of the Agreement and the Review Board Measures.<sup>5</sup> According to Kevin O'Reilly of Alternatives North:

This has been a long struggle for our community to have a more meaningful role in the remediation of Giant Mine... this agreement is for the life of the project, or basically forever, and sets out an integrated approach to a social license for the remediation to move forward.<sup>6</sup>

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environmental degradation, toxicity and political mess of Giant Mine was mentioned several times. Although these committees have their own faults and challenges, they did set a precedent for such processes in the NWT at the same time that Giant was closing. The Independent Environmental Monitoring Agency was created through the 1997 Environmental Agreement negotiated for the Ekati Diamond Mine. Along similar lines, the Environmental Monitoring Advisory Board was created in 2000 for the Diavik Diamond Mine.

<sup>3</sup> Natasha Affolder, Katy Allen, and Sascha Paruk, *Independent Environmental Oversight: A Report for the Giant Mine Remediation Environmental Assessment*, submitted to the MVEIRB public registry (February 2011).

<sup>4</sup> Alternatives North, "News Release on Giant Mine Environmental Agreement," (June 17, 2015).

<sup>5</sup> *Giant Mine Remediation Project Environmental Agreement*, between Indian and Northern Affairs Canada, the Government of the Northwest Territories, the Yellowknives Dene First Nations, the City of Yellowknife, Alternatives North and the North Slave Metis (June 9, 2015).

<sup>6</sup> Alternatives North, "News Release on Giant Mine Environmental Agreement," 1.

The Giant Mine Remediation Project Environmental Agreement solidified the measures of the Environmental Assessment in a legal document that is now used to direct the remediation project based on community objectives.

The Giant Mine Environmental Assessment, the resulting measures and the Environmental Agreement represented a turning point in remediation at the Giant Mine. Not only was the Project Team forced to redefine remediation in correspondence with the twenty-six EA measures, but it was also challenged to move beyond remediation as simply technical, towards a relational approach to remediation. This chapter first outlines how the Giant Mine Remediation Project has changed since the EA and the signing of the Environmental Agreement. Through the Surface Design Engagement workshops, regular Giant Mine Working Group meetings, and the creation of the Giant Mine Oversight Board (GMOB) there has been a move towards a more consistent, ongoing discussion and engagement with stakeholders. This is not to suggest that the Giant Mine Remediation Project no longer faces communication challenges. Fundamentally, remediation continues to be technically directed, due to the very scientifically complex, contaminated nature of the site. However, there is now space for the community stakeholders to demand answers, to provide feedback on planning and to be directly involved in setting project objectives. According to interviewees, the relationship between the Project Team and the community stakeholders has become more reciprocal, if not entirely equal.<sup>7</sup>

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<sup>7</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016); William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016); Kevin O'Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016); Natalie Plato (Head of the Giant Mine Remediation Project Team), interview with author (May 17, 2016).

Using thematic interview data, this chapter will then explore various stakeholder reflections on the Giant Mine Remediation Project, and in doing so highlights points of contention and convergence about what remediation means at the Giant Mine. The varied definitions and experiences of remediation at Giant showcase a diversity of complex relationships with the mine site and between stakeholders. A majority of interviewees' reflections on the history and process of remediation at Giant focused on the theme of (mis)trust and (mis)communication. These ongoing issues shape community concerns about the definitions of remediation, off-site contamination, future land use, perpetual care, and apology, compensation and reconciliation. This chapter will delve into each of these overlapping themes and how they connect to concerns about trust, communication and care. While there is a general community consensus that the Environmental Assessment, and even more so the Environmental Agreement and the creation of the GMOB, improved trust and communication between the project and the community, many community members continue to express concern (or lack of trust) in the government to meaningfully address reconciliation and perpetual care.<sup>8</sup>

Bringing together the analysis of the Giant Mine Remediation post EA, and the reflections of stakeholders, I argue that the Giant Mine Monster is much more than just arsenic; it is a legacy of relationships; it is a troubled history of degradation and marginalization; and it is an accumulation of multiple forms of contamination that stretch beyond the mine site itself. While the Environmental Assessment, the Environmental

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<sup>8</sup> Several interviewees did express the feeling that the Environmental Assessment did not necessarily benefit the community of Yellowknife because it prolonged the Remediation process. However, most interviewees did agree that this process improved communication between the project and the community. See: Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016); Walt and Diane Humphries (volunteers with Mining Heritage), interview with author (May 17, 2016); Rob Lok (City of Yellowknife employee), interview with author (May 9, 2016).

Agreement and the creation of the Giant Mine Oversight Body have pushed discussion on the Giant Mine Remediation beyond a technical clean up and containment approach, the project has yet to officially recognize and confront the issues of apology, compensation and reconciliation for the YKDFN. According to the YKDFN, *caring* for the Giant Mine, the land, and the community in perpetuity requires an official government acknowledgement of calls for apology and compensation. For the community to heal, there needs to be recognition of responsibility for past harms.

### **Confronting the Monster: The ‘New’ Giant Mine Remediation Project**

This section focuses on how the community has re-defined remediation at Giant Mine since the signing of the Environmental Agreement. The Giant Mine Monster is now being *confronted* using multiple perspectives through processes such as the Surface Design Engagement process and the ongoing health and environmental studies that are now being undertaken by the GMRPT. Second, the Giant Mine Oversight Board has been fundamental in providing a structural, consistent mechanism to continue to confront *and* care for the Giant Mine Monster over the coming decades. Therefore, this section will end with a reflection of the role of GMOB and a summary of their first year in operation. According to most interviewees, this ‘new’ Giant Mine Remediation Project has led to a more positive feeling in the community about remediation; it is an ongoing story of community perseverance, passion and care for their land, their neighbours and their future.

#### Surface Design Engagement Evaluation Workshop

The Surface Design Engagement Process reoriented the Giant Mine Remediation



Project Team’s approach to community engagement in order to better align the Project with the EA Measures and Environmental Agreement, which called for direct community engagement in the design of remediation options. However, this engagement process did not include discussion about alternative remediation strategies for the underground arsenic, as the Environmental Assessment solidified underground freezing as the accepted ‘in-term’ solution. Unlike the process used to determine arsenic trioxide management options, community objectives and definitions for surface remediation were established *before* engineering designs were completed. These options were then used to evaluate the performance of various remediation options during the February 2016 Surface Design Engagement Evaluation Workshop.<sup>9</sup>

Preparations for the February 2016 Surface Design Workshop began almost a year earlier in consultation with the newly formed Giant Mine Working Group, an organization that now meets monthly, is hosted by the GMRPT and includes representation from all stakeholder groups. Throughout May 2015, Bill Slater, a technical advisor hired to assist the Giant Mine Working Group met with each stakeholder group in order to identify objectives for surface remediation.<sup>10</sup> These stakeholder meetings asked questions such as: “What vision do you have for the site... [and]... what are the important *values* that could be affected by the project.”<sup>11</sup> This was followed by an ‘options definition workshop’ in June 2015, which coincided with the signing of the Environmental Agreement. Dr. Arn Keeling attended this workshop on behalf of the

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<sup>9</sup> Memorandum from Bill Slater, Technical Advisor to the Giant Mine Working Group, “RE: Giant Mine Remediation Project – Objectives” (January 28, 2016).

<sup>10</sup> SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report,” prepared for Indigenous and Northern Affairs Canada (April 2016), 4.

<sup>11</sup> Ibid., italics added.

Toxic Legacies project, at the invitation of the YKDFN. The ‘options definition workshop’ was used to identify, discuss and define the possibilities for remediation of Baker Creek, pits, tailings ponds, contaminated soils and infrastructure on site. Participants were asked to list their ideas of how remediation of these various surface components might happen, and were then asked to develop a ‘complete vision’ for surface remediation.<sup>12</sup> Finally, participants were asked to discuss ideal forms of stewardship and long-term care of the site. Two major themes for surface remediation emerged from the June workshop: “some of the groups wanted to keep the site ‘grey and ugly’ to discourage people from going to or using the site, and some of the groups wanted people to be able to use some or all of the land in some way.”<sup>13</sup> One common theme expressed by all groups was the inclusion of some kind of monument, interpretive centre or research centre that would document the Giant Mine’s legacy and effect on the YKDFN. Using these visions for surface remediation, consultants designed six options for surface remediation.<sup>14</sup> The risks of these options, and of surface remediation in general, were then reviewed in a follow-up workshop in December 2015.<sup>15</sup>

A year of planning and engagement culminated in the final Surface Design Engagement Options Evaluation Workshop held in Dettah from February 16-19, 2016. The results of this workshop were summarized in the “Draft Report for Surface Design

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<sup>12</sup> SRK Consulting Ltd., “Appendix B-Options Definition Workshop, Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report,” prepared for Indigenous and Northern Affairs Canada (April 2016).

<sup>13</sup> Ibid., 6-7.

<sup>14</sup> A summary of these option is include in: SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report.”

<sup>15</sup> Ibid.

Engagement,” which will now direct the Project Team’s final Remediation Plan.<sup>16</sup>

Participants in the Surface Design Workshop included representatives from Alternatives North, the North Slave Métis Alliance, the Giant Mine Remediation Project Team, the City of Yellowknife, the NWT Mining Heritage Society, government regulators (Environment Canada, the Department of Fisheries and Oceans, Health Canada and the GNWT), technical experts, GMOB Board Members and three tables of YKDFN staff, members, and elders. With the permission of the YKDFN, I also participated in the Surface Design Evaluation Workshop, sitting alongside Alternatives North and observing the evaluation process. This experience opened my eyes to the level of commitment and care that community stakeholders, consultants and project team members alike have poured into this remediation process. It was obvious that this workshop was an accumulation of hours of research, meetings, communications, struggles, disagreements and compromises.

Throughout the Surface Design Workshop, three days were spent reviewing and evaluating each of the six surface remediation options (Fig. 4). On the fourth and final day, we summarized our opinions and feedback and were asked to choose our favourite options. It was a long and exhausting process. The workshop facilitator, Daryl Hockley of SRK Consulting, presented the details of each option before time was given for questions and evaluation. This was then followed by a presentation of each group’s feedback.

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<sup>16</sup> SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report.”

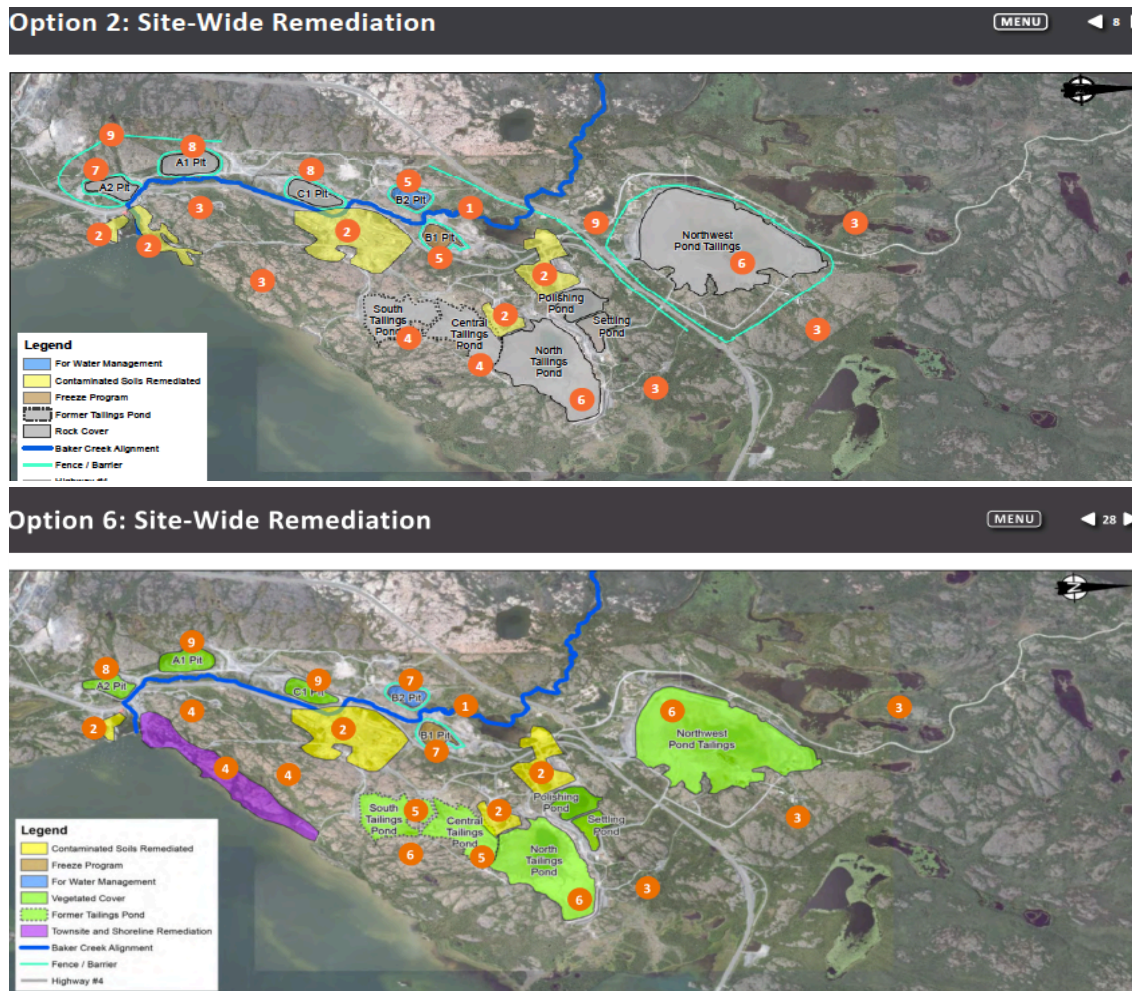


Fig. 4. Examples of Surface Remediation Design Options: The majority of participants' favoured options 2 and 6. Option 6 would revegetate the covers on the tailings and pits and would remediate the waterfront to a residential standard. Option 2 does not include revegetation or residential remediation.

Using a five point ranking system from 'strongly agree,' to 'strongly disagree' participants determine whether the option under review fulfilled (or did not fulfill) each of the 16 objectives developed during the previous June workshop.<sup>17</sup> Each group's ranking was then compiled and presented alongside the ranking of other groups. This facilitated discussion on the areas where certain groups agreed or disagreed. It also

<sup>17</sup> See the SRK Consulting Ltd., "Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report" for a graphic description of this rating process.

allowed the Project Team to determine topics where further consultation might be needed. At the end of the workshop participants were asked to rate their preferred options and provided advice for how these options could be adapted or merged to form the ideal solution.<sup>18</sup>

Some of the most important points of contention throughout the Surface Design Workshop were: off-site contamination, the remediation of Baker Creek, surface soil remediation, future land use, tailings covers, and communicating with future generations.<sup>19</sup> The issue of off-site contamination and offshore tailings was brought up multiple times throughout the Surface Design Evaluation Workshop.<sup>20</sup> According to workshop participants and interviewees, this is a persistent source of mistrust.<sup>21</sup> The remediation of Baker Creek and the restoration of fish populations in the area are also connected to this issue of off-site contamination. As was mentioned several times throughout the workshop, Baker Creek is continually re-contaminated by sources upstream and fish may swim through contaminated areas, and then out into Great Slave Lake. In this way, participants in the workshop questioned how surface remediation would be connected to a broader geography of the cumulative impacts of mining.

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<sup>18</sup> SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report,” 26.

<sup>19</sup> These are my own impressions, summaries and notes taken from my participation in the Giant Mine Surface Design Engagement Options Evaluation Workshop (February 16-19, 2016). Conversations with interviewees after the workshop have also influenced these impressions. Reflections from interviewees are discussed later in this chapter.

<sup>20</sup> Since the original 2007 Remediation Plan, there seems to have been little meaningful discussion on the controversy of remediating only within the lease boundary. This seems to be a decision that was made early on without consultation. Even in the Environmental Assessment, during scoping sessions, it was decided that remediation would be contained within the lease boundary – this was not up for debate throughout the EA. See the *Giant Mine Remediation Plan* (2007); *Developers Assessment Report* (2010).

<sup>21</sup> Personal notes from the Surface Design Workshop; Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016); Erica Janes (former manager for the Giant Mine file with Alternatives North), interview with author (May 16, 2016).

Among the most contentious topics at the workshop were the questions of surface soil remediation standards, tailings ponds and future land use at the site.<sup>22</sup> As summarized in the Options Evaluations Draft Report: “The extent to which future land use should be allowed remains an issue where groups disagree.”<sup>23</sup> The standard to which the soil is remediated could limit future uses. The tailings ponds, being the largest surface ‘footprint’ on site, also became an important point of contention; should they be re-greened, used as sports fields, or left as rocky, unwelcoming landscape scars? While the Developers Assessment Report and the Environmental Assessment clearly stated that the site would be remediated to an ‘industrial standard,’ one of the options included remediating the old town site to residential standards (Fig 4) and there was discussion of developing the space for tourism, hiking trails and other recreational uses.<sup>24</sup> Definitions of standards for remediation included ‘industrial,’ ‘recreational’ and ‘residential,’ but the exact details of how these standards are determined were unclear throughout the Surface Design Workshop. Participants agreed that soils, sediments and tailings ponds should be remediated to standards that pose minimal risk under any future land use. But at the same time, there was disagreement about whether or not to allow for future use.

Many workshop participants wanted to plan for future land uses and perpetual care, and then to shape surface remediation around these ideas. Technically, however, the

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<sup>22</sup> CBC News, “No consensus yet on use of Giant Mine lands after cleanup,” *CBC New North* (Feb 18, 2016), accessed July 2017, <http://www.cbc.ca/news/canada/north/giant-mine-remediation-plans-1.3453698>

<sup>23</sup> SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report,” 30.

<sup>24</sup> See Options 5 and 6 in SRK Consulting Ltd., “Giant Mine Remediation Project Surface Design Engagement Options Evaluation Workshop: Draft Report.” It was decided that Option 5 would not be reviewed in depth, as it was very similar to Options 2 and 6. Participants agreed that carrying it through a full evaluation would not be of any additional value. In addition, the City of Yellowknife is particularly interested in the potential to develop the waterfront area and the old town site.

Project Team is taking an approach that remediates and then plans for future land use based on the limits of the final remediated site. For several workshop participants, planning for surface design and future land use now is extremely important to how this site will be communicated to future generations. According to YKDFN members, if the site is left ugly, in the future, children will ask, ‘why is that big scar there?’<sup>25</sup> According to Randy Freeman, a traditional knowledge specialist for the YKDFN, ‘grey and ugly’ tailings ponds could be a ‘jumping off point’ – a way to experience the story of Giant Mine in future.<sup>26</sup> Many workshop participants saw surface remediation as a way to shape how the site will be remembered and used in the future.

While the Project Team and their consultants preferred to focus on the material design of the site and the various options of how tailings could be moved, covered and re-vegetated, the community participants continually questioned how material remediation would affect future land use options and perpetual care, and how it could help to heal past scars. These were topics that the community stakeholders brought to the table, with their own expertise and experience. Rather than having these concerns dismissed, through the Surface Design Engagement Evaluation Workshop, the various stakeholder groups had the chance to select, change and make recommendations on options that reflected their values for remediation, future land use and perpetual care. While the consultants reviewed the technical aspects of each option, participants translated this information, combined it with their own values and motivations and selected options that made compromises between technical science and their own ideals. Several workshops participants and

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<sup>25</sup> William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016)

<sup>26</sup> Randy Freeman (YKDFN employee), interview with author (May 19, 2016).

interviewees stated that the Surface Design Workshop was pivotal in ensuring more meaningful community engagement and an ongoing process of oversight and communication between stakeholders.<sup>27</sup>

### The Giant Mine Oversight Board

The Giant Mine Oversight Board opened its doors on Franklin Avenue, the main street in Yellowknife, in January 2017. The office provides a space for the public to drop in with questions about Giant Mine, and it features models of the underground freezing process.<sup>28</sup> As mentioned earlier, the GMOB is modelled after the independent oversight boards established for diamond mines in the Northwest Territories. It is an autonomous body made up of a six-member Board of Directors appointed individually by the parties to the Giant Mine Remediation Project Environmental Agreement. As outlined in the Environmental Agreement, the role of the Oversight Board is to promote public awareness of the project, promote public engagement with the project, provide independent advice on the management of the project, and manage a research program toward a permanent solution for dealing with arsenic trioxide.<sup>29</sup> GMOB's vision is "that the remediation of the Giant Mine site, including the subsurface, is carried out in a manner that is environmentally sound, socially responsible, and culturally appropriate."<sup>30</sup>

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<sup>27</sup> Personal notes from discussions with participants throughout the workshop. In addition, several interviewees identified the Surface Design Workshop as an example of successful engagement: Johanne Black, Kevin O'Reilly, Erica Janes, William Lines, Gordon Hamre, and Tony Brown among others.

<sup>28</sup> Mitch Wiles, "Looking for new ways to clean up toxic mess: Giant Mine Oversight Board opens doors," *CBC News*, (January 19 2017).

<sup>29</sup> *Giant Mine Remediation Project Environmental Agreement*.

<sup>30</sup> GMOB, *Establishment Report July 2016-December 2016* (April 2017), 6.



Within the first six months of its operation, the GMOB has reviewed the *2015-2016 Annual Report for the Giant Mine Remediation Project* and has published the *GMOB Establishment Report*. In these two documents, the GMOB explains its role in the Remediation Project, introduces preliminary plans for a research program and outlines its main concerns with the Remediation Project going forward. The majority of the GMOB's concerns with the *2015-2016 Annual Report* centered on the fact there are no mechanisms to track performance measures or community concerns and whether or not these concerns are being addressed. According to the GMOB, without such mechanisms, it is difficult to evaluate the Remediation Project and ensure accountability. The GMOB review also pointed out smaller details. For example, *2015-2016 Annual Report* does not reflect what the criteria are for work to be categorized as an 'emergency measure' versus 'care and maintenance.' Also, there is no mention of how new remediation technology might be incorporated. Such an extensive review is a useful resource for community members who do not have the time or resources to review such documents themselves.

Building on the review of the 2015-2016 Annual Report, the GMOB's *Establishment Report*, published in April 2017, looked beyond the details of technical remediation and emphasized the need to address social harms. The *Establishment Report* provides the basis for a long-term structure of community-based remediation practices and sets up strategies to track and evaluate the Project in a more meaningful way. The twelve recommendations outlined in this report were based on the following principles: trust, transparency, communication and engagement, reconciliation, social license,

culture, knowledge (western scientific and Indigenous), and community well-being.<sup>31</sup> The principles of remediation outlined in the *Establishment Report* contrast drastically with the risk management principles outlined in earlier remediation plans. More specifically, in regards to community engagement, the GMOB noted that the Surface Design Workshop seemed to be effective, but other engagement strategies seem less so. The GMRP website is out of date, there is no plain language work plan, and the Project Team has no publically open office space. The GMOB *Establishment Report* points out that fewer resources have been directed towards these communication efforts than towards technical remediation ‘on the ground.’

Following the publication of its *Establishment Report*, the GMOB held its first annual public meeting on May 16, 2017 at the Tree of Peace in Yellowknife.<sup>32</sup> After Dr. Kathleen Racher, the Chair of the GMOB, outlined the role of the GMOB and its initial review of the Giant Mine Remediation Project Annual Report, the floor opened up to questions. The public was also invited to chat with the various board members after the formal presentation. Throughout the evening, the same issues of off-site contamination, perpetual care, and apology and compensation continued to be brought up. Multiple people expressed their concerns that there was no signage and a general lack of awareness around contaminated lakes, trails and recreational areas around Yellowknife. Concerns were expressed about arsenic trioxide hotspots in N’dilo near the school and one

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<sup>31</sup> GMOB, *Establishment Report July 2016-December 2016*; GMRP, “Responses to Recommendations from Giant Mine Oversight Board Establishment Report” (May 2017).

<sup>32</sup> I was a participant observer at the GMOB’s first annual public meeting.

community member questioned why these spots had not yet been addressed.<sup>33</sup> One audience member stated that when it comes to contamination and the environment, there is no such thing as off-site. Throughout the meeting there was a continual push to deal with the off-site issue and the reconciliation issue.

However, GMOB plays a strictly advisory role; all they can do is recommend that the GMRPT coordinate with the federal government, the GNWT, the City of Yellowknife and the YKDFN in order to promptly respond to these concerns.<sup>34</sup> This advisory role is a challenge for the GMOB; there are few mechanisms to actually enforce their recommendations; they have “no contractual means to tell [the Project] that they have to do something.”<sup>35</sup> Additional challenges that GMOB will face include distinguishing themselves as separate from the Giant Mine Remediation Project Team. Tony Brown, a GMOB Director, said that the board has been struggling with several challenges in starting up and in defining their role more specifically: “there’s this awkwardness where we have a storefront in Yellowknife, but the project doesn’t. And we’re going to understandably become the face for the project... and I’m a bit concerned about that because I think that it shifts the perception of responsibility from the project team to us.”<sup>36</sup> The GMOB is also not responsible for remediation itself, which some community members find confusing.

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<sup>33</sup> Multiple audience members at the GMOB public meeting expressed these concerns and questions, which were also reflected in an interview with Johanne Black. For a summary of some of the concerns expressed at the public meeting, see: Richard Gleeson, “Off site arsenic contamination a growing public concern in Yellowknife,” *CBC News*, (May 17, 2017).

<sup>34</sup> Personal notes from participation in the GMOB’s First Annual Public Meeting (May 16, 2017).

<sup>35</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016)

<sup>36</sup> Brown, Tony (GMOB Director), interview with author (May 25, 2016).

As of this writing, both GMOB and the Giant Mine Remediation Project are currently focused on the Health Effects Monitoring Program and the Human and Environmental Health Risk Assessment. The monitoring program will determine current baseline levels of arsenic exposure and will then monitor exposures throughout the remediation process.<sup>37</sup> While the monitoring program will evaluate possible changes in exposure as a result of the remediation project, it is unable to determine past exposure, or the possible harms that have accumulated as a result of exposures over a long period of time. In addition to these ongoing health studies, the GMRPT is directly involved in monthly meetings with the Giant Mine Working Group and the YKDFN's Giant Mine Advisory Council. There is also work being done towards a socio-economic plan that will help to ensure local employment and training throughout the remediation process.<sup>38</sup>

The Giant Mine Remediation Surface Design Options Evaluation Workshops, the creation of the GMOB and the ongoing community engagement and health monitoring efforts are reflective of a drastic change in the tenure of remediation planning at the Giant Mine. This 'new' remediation project, is one that most interviewees reflected on as something that is more community driven and transparent. However, as the GMOB points out in its review of the *2015-2016 Annual Report*, while the Project team is logging more consistent community engagement hours, there is no process to track this engagement or to evaluate whether or not community concerns are actually being dealt with through

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<sup>37</sup> The Health Effects Monitoring Program is lead by Dr. Laurie Chan from the University of Ottawa. It will include participants from Yellowknife, N'dlo and Dettah and will begin data collection in the fall of 2017. See their website for more details: <http://www.ykhemp.ca/>

<sup>38</sup> This is all outlined in the GMRP's *2015-2016 Annual Report* (January, 2017). See also the "What's Happening at Giant" Newsletters for more details about community engagement initiative including industry fairs, job fairs, public meetings, displays etc.: <https://www.aadnc-aandc.gc.ca/eng/1374777790923/1374777851043>

engagement processes. The community is being heard, but it can sometimes be difficult to see where these comments go.

### **Confronting the Giant Mine Monster: Reflections on the Giant Mine Remediation Project**

*“This is not a remediation plan; it’s a stabilization plan. It’s about managing risks... when we’ve heard about the objectives of this plan from the Developer, I think it’s clear that they don’t really reflect the needs or wants of this community. Whether it’s folks uptown, people in Dettah and N’dilo, the community – the objectives of this plan do not fit our needs.”<sup>39</sup> –Kevin O’Reilly (Alternatives North).*

The Giant Mine Remediation Project is now in a ‘new’ era of planning and many community stakeholders continue to look back on what has happened at Giant as they move forward. This section focuses on stakeholders’ reflections on the Giant Mine Remediation planning process to date and includes an investigation of how perceptions of the Giant Mine differ, what interviewees’ definitions and values of remediation are, and where they hope to see the remediation project go in the future. As discussed earlier, interviewees included people from all community stakeholder groups, government employees, regulatory officers, and consultants (Appendix I). Some have lived in Yellowknife all their life, some for several years, and some for just the last two years. Interviewee reflections on the Giant Mine and the Remediation Project are diverse and nuanced and many participants contextualized their experiences within a broader history of settlement, industrialization and colonization.

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<sup>39</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 4 of 5” (Yellowknife, September 13, 2012), 24.

Throughout the interview analysis process, I found it difficult to separate participants' reflections on the Giant Mine Remediation from their experiences of the Giant Mine more broadly. Historical narratives and opinions of the mine's operational days were interwoven with details about remediation. Interviewees' opinions about the Giant Mine Remediation Project were often times largely based on their past experience with mining companies and government regulators. My attempts to order interviewee reflections into some kind of chronological sequence quickly fell apart as participants constantly referenced historical events in association with present day remediation struggles. Community members used their knowledge of historical legacies to confront and question the ways in which remediation had been framed as ahistorical and apolitical. In this sense, interviewees' historical experiences and memories of the Giant Mine cannot be detached from their reflections on the Remediation Project and the Environmental Assessment. Rather, this section will begin by outlining interviewees' experiences of the Giant Mine legacy and how such experiences are linked to the perspectives and values that have driven stakeholder engagement throughout the Environmental Assessment, Surface Design Engagement and ongoing planning.

### The Giant Mine Legacy

Divergent perspectives on the history of Giant Mine are directly related to many of the contentious issues that were continually brought up throughout initial community consultation, the Environmental Assessment, and current day engagement. In many ways, people in Yellowknife are divided between seeing the history of the Giant Mine as a 'good' story or a 'bad' one: "There's a lot of bad that came with it, there's a lot of good

that came with it. Does that bad outweigh the good? Depends on who you talk to.”<sup>40</sup> For many the mine was an opportunity for a job and the creation of the community: “and so we have to recognize the heritage of the community in terms of what those mines meant to the community.”<sup>41</sup> Nevertheless, as the current Mayor of Yellowknife stated, “it is important that we now change our attitude to a degree about what these mines mean now for the community.”<sup>42</sup>

For several interviewees, their experiences of the Giant and Con Mines were ones of community building; the Giant Mine represented a job opportunity, economic stability, and a place to raise a family. As one community member stated: “there’s probably a couple generations of people who worked out at Giant Mine, or even Con Mine. I mean, it meant something else... cause it was what led us... my parents... it gave my immigrant parents a job and gave my father training... and in so provided for our family... and there’s a lot of positive stories around the community.”<sup>43</sup> This community member goes on to summarize the benefits of Giant Mine, including the construction of hospitals and the development of the city of Yellowknife. When speaking about the ‘environmental mess’ that is Giant Mine, several community members mentioned that the ‘standards of the day’ weren’t good anyway, and that people should understand that and move on.<sup>44</sup>

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<sup>40</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

<sup>41</sup> Mark Heyck, (Mayor of Yellowknife), interview with author (May 10, 2016).

<sup>42</sup> Ibid.

<sup>43</sup> Tom Hoefer (Director of the NWT and Nunavut Chamber of Mines), interview with the author (June 3, 2016).

<sup>44</sup> Craig Wells (Head of the Giant Mine Remediation Project Team, Ottawa Office), interview with author (May 16, 2016); Tom Hoefer (Director of the NWT and Nunavut Chamber of Mines), interview with the author (June 3, 2016); Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016); Walt and Diane Humphries (volunteers with Mining Heritage), interview with author (May 17, 2016); Ken Hall (former Giant Mine employee, GMOB Director), interview with author (June 7, 2016).

Some stakeholders claimed that the majority of Yellowknifers feel impatient; the mine is closed, and they want to see the site remediated as quickly as possible.<sup>45</sup> According to one GNWT employee, “a lot of people didn’t understand the impacts of the work they were doing and the impacts it had on the environment.”<sup>46</sup> Several stakeholders expressed a general community feeling that the mines are the backbone of the community, an important, often positive part of labour and community heritage.

By contrast, the YKDFN shared little in this ‘good’ story and they have little faith in the Remediation Project to keep them safe in perpetuity. Environmental contamination around Yellowknife fundamentally changed a way of life for the YKDFN. They were no longer able to use an area that provided hunting, fishing and gathering opportunities: “they shut our roads, sled dog trails... they shut it down. I’ll never get there anymore. And many people lost their sled dogs. They’ve never been compensated.”<sup>47</sup> In combination with other developments and settlements in the NWT, and resulting changes in the environment, fish and caribou started to disappear: “So if your cultural identity depends on that whole cycle of existence... the whole cycle of things just sort of crashed to an end.”<sup>48</sup> The Giant Mine legacy continues to influence the Yellowknives’ day-to-day lives and traditional practices. According to one YKDFN member, pollution and

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<sup>45</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016); Walt and Diane Humphries (volunteers with Mining Heritage), interview with author (May 17, 2016); Mike Auge (City of Yellowknife employee), interview with author (May 17, 2016). Both Kevin O’Reilly and Erica Janes mentioned that the majority of Yellowknifers do not pay attention to the Remediation Project.

<sup>46</sup> Lisa Dyer and Erika Nyssonen (GNWT Environmental and Natural Resources and the GMRPT), interview with author (May 31, 2016).

<sup>47</sup> Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016); Yellowknives Dene First Nation Land and Environment Committee, *Giant Mine – Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*, prepared for the Department of Indian and Northern Affairs Giant Mine Remediation Project (October 13, 2005).

<sup>48</sup> Randy Freeman (YKDFN employee), interview with author (May 19, 2016).



environmental destruction was the “driver of the demise of the Yellowknives in terms of keeping their traditions alive.”<sup>49</sup> YKDFN interviewees reflected that remediation must deal with the cumulative consequences of the Giant Mine legacy.

With these varying perspectives on history in mind, remediation at the Giant Mine becomes a question of what stories are told, and which stories are dominant. As Ben Nind, Executive Director of the Giant Mine Oversight Body stated:

What stories do we want to tell? Can we think about the community that was built, the positive aspects of the community that was built as a result of that activity... do you want to dismiss that story? You can't dismiss that story because that's peoples' lives... that's generations of lives that are here.<sup>50</sup>

At the same time, these good stories, directly and indirectly caused a lot of harm, even if it wasn't known or publically acknowledged at the time. Some interviewees want the

Remediation Project to address these historical issues directly. As Randy Freeman stated:

It's a real division within the community... I saw that coming out in the environmental assessment. You know, why aren't we recognizing the good that the mine did? Well was it really good? From the perspective of the Yellowknives Dene it certainly wasn't. And it wasn't just the mine putting arsenic into the water; it was you know, the creation of the city, the other mines.<sup>51</sup>

The ‘good’ story is important, but can also be a method of obscuring responsibility for the past. According to several interviewees, responsibility for the legacy of Giant Mine should be confronted and dealt with *through* remediation; reconciling with the history of the Giant Mine is an essential part of the Remediation Project story. For the YKDFN and

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<sup>49</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016)

<sup>50</sup> Ben Nind (Executive Director of GMOB), interview with author (May 31, 2016).

<sup>51</sup> Randy Freeman (YKDFN employee), interview with author (May 19, 2016).

Alternatives North trust in the Project and transparent community between stakeholders will continue to be hindered unless responsibility for mining legacies is acknowledged.<sup>52</sup>

Questions around remediation and future land uses intersect with ideas of heritage and remembrance surrounding the Giant site. Some would prefer that the site include some formal heritage aspects, such as a museum, interpretive trails, libraries and the development of education programs. The YKDFN have also discussed the creation of a story or legend about the Giant Mine based on their traditional knowledge. Some YKDFN members have struggled with this idea, as legends are not simply ‘made up’ and must come from tradition and consultation with elders.<sup>53</sup> According to Erika Nyysönen, a GNWT employee: “I think it’s important that it’s not forgotten... all the good and the bad... some sort of recognition out there... my personal opinion would be that there be some sort of memorial, museum type of center to document the history.”<sup>54</sup> Space for an interpretive center was included in the surface design workshop options, but the details of how this might unfold have not yet been discussed. In this case, negotiating history, and the values and morals portrayed will be an important part of community engagement in

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<sup>52</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016); William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016); Kevin O’Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016); Gordon Hamre (former Environment Canada employee and volunteer with Alternatives North) in interview with author (May 27, 2016); Randy Freeman (YKDFN employee), interview with author (May 19, 2016); Todd Slack (former YKDFN employee), interview with author (May 26, 2016); Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016); Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016); Shin Shiga (Environmental manager for NSMA), interview with author (May 27, 2016).

<sup>53</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016); William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016); Randy Freeman (YKDFN employee), interview with author (May 19, 2016)

<sup>54</sup> Lisa Dyer and Erika Nyysönen (GNWT Environmental and Natural Resources and the GMRPT), interview with author (May 31, 2016). Several other interviewees mentioned possible perpetual care scenarios: David Livingstone, Walt Humphries, Dennis Kefalas, Natalie Plato, and Todd Slack. Johanne Black and William Lines both mentioned the possibility of creating a Dene story about Giant Mine, but have yet to formally discuss such a project with community elders and leaders.

future remediation and care and maintenance of the Giant Mine site. As one city employee states, “You want to keep the history, you don’t want history to repeat itself... So long as we say here is the impact it did have on the City positively and here’s what negative impacts it had and here’s how we tried to mitigate the negative impacts.”<sup>55</sup>

### (Mis)trust and (mis)communication

According to Horowitz, trust in scientific information is often “contingent upon trust of whoever has generated the science and whoever will be implementing its recommendations... trust depends... on the reciprocal perception of, and interaction between, these parties. These relationships, in turn, are not fixed... but fluid, continuously ‘evolving,’”<sup>56</sup> Horowitz goes on to state that trust “arises through repeated reciprocal exchanges and the mutual development of care and concern.”<sup>57</sup> Fundamental to stakeholder trust, is the “ability to control information-generating processes; the inclusivity of research... can play a large role in acceptance of results, as ‘stakeholders,’ who were excluded from the dialogue may reject scientists’ findings.”<sup>58</sup> In this way, trust is developed through continual engagement, participation and co-development of concerns and cares between all stakeholders, developers, community members and government regulators. From the 2000 bankruptcy through the publication of the 2007

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<sup>55</sup> Dennis Kefalas (City of Yellowknife employee), interview with author (May 10, 2016).

<sup>56</sup> Leah S. Horowitz, “Twenty years is yesterday: Science, multinational mining and the political ecology of trust in New Caledonia,” *Geoforum* 41 (2010): 617-626, 617.

<sup>57</sup> *Ibid.*, 618.

<sup>58</sup> D. W. Cash, W.C. Clark, F. Alcock, N.M. Dickson, N. Eckley, D.H. Guston, J. Jger and R.B. Mitchell, “Knowledge systems for sustainable development,” proceedings of the *National Academy of Science* 100, no. 14 (2003): 8086-8091, 8088; taken from Horowitz, “Twenty years is yesterday,” 618.

Remediation Plan, the call to EA, the scoping sessions and creation of the Developers Assessment Report, the GMRP did little to build trust or reciprocal relationships.

When interviewees reflected on the benefits, challenges and process of the Giant Mine Remediation Project and the Environmental Assessment, they spoke little about technical details. Rather, issues of trust and communication were mentioned in almost every interview: “it takes time to build trust, but... trust will fall apart if you don’t move things forward as well.”<sup>59</sup> According to several interviewees, engagement before the EA was inconsistent, and information was not transferred effectively between stakeholders.<sup>60</sup> The initial reluctance of the GMRP to meaningfully fulfil its duty to consult with the First Nation and its reluctance to negotiate for independent oversight added to these feelings of mistrust. In addition, several community members expressed a lack of trust in the Project to take perpetual care seriously: “I just don’t have a lot of faith in institutional controls being passed on and people being kept safe.”<sup>61</sup> Looking back, many interviewees considered the Environmental Agreement as part of a trust-building process; one that focused on confronting (mis)trust and (mis)communication.

Interviewees identified several points of contention that reflected the project’s failure to engage meaningfully prior to the EA. According to one technical advisor:

I have long been of the view that Giant might have been under construction if they had gone into the [EA] process at the very front end... But they naively believed that they could get the project done without it and therefore didn’t prepare themselves for it and when they were told they had to go into it, then they were two years delayed to put together the applications.”<sup>62</sup>

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<sup>59</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

<sup>60</sup> Almost every interviewee mentioned that community engagement before the EA was not sufficient.

<sup>61</sup> Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016).

<sup>62</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

Interviewees also discussed several other steps that could have changed the initial tenure of the EA, including funding the construction of a new pipeline for the City's water supply, or facilitating some kind of organization around off-site concerns, or addressing legacy concerns of the YKDFN.<sup>63</sup> Most interviewees remembered a feeling of dissatisfaction prior to the EA that their concerns, advice and opinions were not being taken seriously. In addition there were many different views of what should or shouldn't be done: "people did not have the same view at all... and to me that was an indication that people had not reached a common understanding."<sup>64</sup> As one project team member stated: "If I had to guess some of the frustrations people had is they would take the time to raise issues or raise certain things, but they didn't necessarily... I think they were heard, but there was just no feedback for them to know that... those things had been considered or how they'd been considered."<sup>65</sup>

In regards to negotiations for independent oversight at the beginning of the EA, David Livingstone remembered that "the Feds withdrew basically and said look, we're going to wait until the outcome of the impact assessment process is in black and white and the we'll decide whether to get engaged or not."<sup>66</sup> After initial negotiations the project team decided that it was better to finish the EA before committing to an

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<sup>63</sup> Dennis Kefalas (City of Yellowknife employee), interview with author (May 10, 2016); Mark Heyck, (Mayor of Yellowknife), interview with author (May 10, 2016); Todd Slack (former YKDFN employee), interview with author (May 26, 2016); Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016); Kevin O'Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016).

<sup>64</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

<sup>65</sup> Craig Wells (Head of the Giant Mine Remediation Project Team, Ottawa Office), interview with author (May 16, 2016).

<sup>66</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016)

agreement, leaving the stakeholders frustrated and feeling betrayed.<sup>67</sup> Former YKDFN employee Todd Slack reflected that if they had said yes to some kind of independent oversight at the beginning of the EA, “it would have totally changed the tone of the EA.”<sup>68</sup> The failure to negotiate in good faith on independent oversight was a missed opportunity to build trust with both the YKDFN and the wider Yellowknife community.

Communicating the details of such a large project, across different kinds of knowledge has also been a continual challenge: “All these people, it’s just that they all have these very encapsulated roles that are not necessarily communicating with each other and the net effect of that... from the outside looking at it, is that it’s hard to trust it sometimes.”<sup>69</sup> In addition, for a long time, community consultation was approached as one-way presentation and education, rather than what one GNWT employee calls “knowledge transfer”<sup>70</sup> in multiple directions. It was thought that if the Project and its consultants could educate the community on what the best practices were, the project would be approved.

However, as mentioned, community stakeholders all had very different experiences of the Giant Mine: “They live in the same spot, the same dust is blowing in to their life and one person says I’m not worried about that and the other person says that’s going to kill people in my community.”<sup>71</sup> As one technical advisor points out with respect to First Nations, “you are speaking to a group of people that the federal government put

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<sup>67</sup> Kevin O’Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016); Todd Slack (former YKDFN employee), interview with author (May 26, 2016).

<sup>68</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016).

<sup>69</sup> Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016).

<sup>70</sup> Lisa Dyer and Erika Nyssonen (GNWT Environmental and Natural Resources and the GMRPT), interview with author (May 31, 2016).

<sup>71</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

into residential schools, and you think they're just going to believe you.”<sup>72</sup> YKDFN

members mirror these sentiments saying:

Since the 1930s the Yellowknives Dene had no trust with the federal government. First with the treaties; the violation of the treaties. They basically lied. And there's residential school. And then there's racism. And now they have this mining clean up... there's never been trust.<sup>73</sup>

In the 2007 remediation plan, the government did little to “facilitate, or reconcile, or address any of these legacy issues in any way, but the EA did... it did provide an opportunity... to get together to talk about this and work together on it.”<sup>74</sup>

Community perceptions of trust and communication have changed drastically since the EA: “My impression now is that there's a genuine willingness and interest from the proponents of the project to engage effectively with the community and to understand what they want to achieve.”<sup>75</sup> This shift has a lot to do with a better understanding of the value of local and traditional knowledge and recognition of the need for community support in remediation projects. One project team member reflected on her own shift in thinking:

I think if somebody tells me it's proven scientifically, that this will not hurt you, I believe it. So I was having a very hard time grasping that, but then, I think it was Johanne Black, looked at me and said, you know what... yes, but seeing that dust, no matter what's in it, it could be baby powder, I don't care, it causes me stress and you know stress causes ill effects. It was like a waking moment for me... I get it now.<sup>76</sup>

Community engagement in the Remediation Project is not just about what scientific studies have shown, it is about belief, and trust and history: “I'm not a person who

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<sup>72</sup> Ibid.

<sup>73</sup> Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016).

<sup>74</sup> Kevin O'Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016).

<sup>75</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

<sup>76</sup> Natalie Plato (Head of the Giant Mine Remediation Project Team), interview with author (May 17, 2016).

believes that simple solves the communication challenge. I think the big issue is an issue of trust.”<sup>77</sup> And while stakeholders continue to be critical, and there are continued challenges for communication, many interviewees had the impression that the general public has trust that the project team is now working in the community’s best interest.<sup>78</sup>

I think one of the primary motivations of remediation is to provide a degree of peace of mind... I think that within CARD there is a real sort of ethical commitment to address the need, expectations, wants and address the fears of the community members even if there wasn’t scientific evidence to back that up... you know, FCSAP is really there to... the money is intended to improve environmental conditions, not social perspectives, so in the absence of those technical drivers... there has been a bit of creativity used to push some of these projects through.<sup>79</sup>

The EA did not simply bring about total trust in the project, but it was a community driven process, that gave stakeholders the opportunity to hold the government project accountable.

Many interviewees, in discussions on trust and community engagement for remediation, referenced the Colomac Mine remediation project. Colomac, an abandoned gold mine located 200 km northwest of Yellowknife, in the Tlicho First Nation’s territory, was also owned by Royal Oak, and along with Giant, went into receivership in 1999.<sup>80</sup> Several interviewees had experience working on the Colomac remediation project, which is now considered to be finished, and is in the monitoring and maintenance

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<sup>77</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

<sup>78</sup> Ben Nind (Executive Director of GMOB), interview with author (May 31, 2016); Brown, Tony (GMOB Director), interview with author (May 25, 2016). Shin Shiga (Environmental manager for the NSMA), interview with author (May 27, 2016).

<sup>79</sup> Tony Brown (GMOB Director), interview with author (May 25, 2016).

<sup>80</sup> Indian and Northern Affairs Canada, *Colomac Site Remediation Plan: Final Report*, Contaminated Sites Office (Water License MV2000L2-0018, March 2004).



phase.<sup>81</sup> The Colomac remediation was conducted through the federal government's Contaminants and Remediation Directorate (CARD), while Giant, being such a large project, had its own, separate Project Team. The remediation of this site is often considered a community engagement success: "Colomac was a really good example I think of getting early community buy in... Giant, for whatever reason, didn't do that in the beginning."<sup>82</sup> Initial engagement with the Tlicho for the Colomac remediation included creating objectives and options, then rating these options.<sup>83</sup> One interviewee stated that, while working on the Colomac Mine remediation, there was a lot of time and resources put into community engagement at the front of the project, which saved money in the long run; it was "a part of the social license cost... it serves that trust issue, there's community support... all of those things, sometimes tangible, sometimes not."<sup>84</sup> When the Colomac remediation plan was published and an application for water license was submitted, the project was backed by community support and no environmental review was necessary.<sup>85</sup>

Horowitz writes that in colonial or post-colonial settings, legacies of domination of indigenous groups by companies or governments that are now "attempting to influence their behaviour through provision of 'information,'"<sup>86</sup> may result in suspicion and mistrust, "especially if it prescribes restrictions similar to those imposed previously by

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<sup>81</sup> Indian and Northern Affairs Canada, *Colomac Mine Remediation Project: Post Reclamation Monitoring and Residual Hydrocarbon Remediation Management Plan* (September, 2012).

<sup>82</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

<sup>83</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016); N. VanderKlippe, "Caribou shielded from toxic tailings," *Edmonton Journal* (Oct 17, 2003).

<sup>84</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016)

<sup>85</sup> Indian and Northern Affairs Canada, *Colomac Site Remediation Plan: Final Report*, Contaminated Sites Office (Water License MV2000L2-0018, March 2004); Dillon Consulting Limited, *Remedial Action Plan Overview – Colomac Site Final Report, 2005-2007* (March 2005).

<sup>86</sup> Horowitz, "Twenty years is yesterday," 617.

colonial governments.”<sup>87</sup> In connection to Dillon’s argument that systems of marginalization can be perpetuated through remediation and clean-up processes, a lack of trust in relationships can also be perpetuated. Looking back on the Giant Mine Remediation Project, interviewees reflected that, initially, little was done to build trust. Community stakeholders were not directly involved in directing the science of remediation, and their concerns and cares were not discussed meaningfully. Many interviewees identify this lack of trust as the main motivator in stakeholder decisions to call the Giant Mine Remediation to EA; there was no trust that the Project would move forward with the social, economic and environmental interests of the communities in mind. The Environmental Agreement, for many interviewees, represents a formalized stepping-stone in the process of trust building. However, as one interviewee remarked, community members must always keep one eye watching, as relationships of trust are re-negotiated.<sup>88</sup> The next section will review some of the aspects of remediation and trust that community stakeholders are continuing to negotiate.

### **Confronting the Monster: Community Definitions of Remediation, Future Land Use, Communicating with Future Generations and the Reclamation of Value**

*Remediation is a newer field and a lot of it has been focused on simply physical, chemical stabilization. During my time with Giant and... since I started working in the North in the early 2000s, it’s moved from just that physical stabilization to incorporating local values.*<sup>89</sup> – Adrian Paradis (former regulatory manager for the GMRPT)

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<sup>87</sup> Ibid.

<sup>88</sup> Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016).

<sup>89</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

## Definitions of Remediation

Community perceptions and definitions of remediation were not directly addressed throughout early planning processes at Giant. Historically, plans for closure included terms such as *abandonment*, *restoration* and *rehabilitation*.<sup>90</sup> Since the federal government took responsibility for the site, there has been limited discussion about the use of the term *remediation* for the Giant Mine. As mentioned in the theoretical section of this thesis, using the term remediation can limit project definitions, goals and mandates to the clean-up and containment of pollution, rather than addressing larger questions of morals, values and relationships with the degraded environment.<sup>91</sup> As argued in the previous chapter, at Giant a remedial approach that focused on containment of arsenic also acted to contain knowledge and define what kinds of knowledge were considered relevant. Project definitions of remediation as containment and risk management sidelined community perceptions of what it meant to ‘clean’ and ‘heal’ the Giant Mine area. However, visions of remediation, what values it entails, and how land and people can be protected far into the future present diverse opportunities for discussion and debate. Recently, through the Surface Design Workshop, concepts of remediation and future land uses have been constructively discussed with community stakeholders.

Interviewees articulated multiple definitions and expectations of remediation. Most of these definitions and expectations fell within the following themes: 1. Safety, stability and risk management of the site; 2. Fixing, repairing, or restoring to a defined

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<sup>90</sup> Giant Yellowknife Mines Limited, “Abandonment and Restoration Plan for Yellowknife Division Operations,” (October 16, 1985); Royal Oak Mines Ltd. Yellowknife Division, “The Giant Mine Abandonment and Restoration Plan” (September, 1992)

<sup>91</sup> Arn Keeling and John Sandlos (ed.), *Mining and Communities in Northern Canada* (Calgary: University of Calgary Press, 2015); Robert L. France (ed.), *Healing Natures Repairing Relationships: New Perspectives on Restoring Ecological Spaces and Consciousness* (Vermont: Green Frigate Books, 2008).

standard; 3. Communication and intergenerational planning; and 4. Returning some kind of value to the site, be it social, economic, environmental, historical, reconciliatory or justice-related. Most of the interviewees' definitions of remediation also included discussions on future land use and perpetual care. The variety of perspectives and expectations of remediation expressed by stakeholders warrants further discussion on what remediation at Giant really means.

In official reports and project team communications, technical, containment-based definitions of remediation prevail. Most technical definitions of remediation at Giant focus on ideas of safety, stability and risk mitigation,<sup>92</sup> and indeed, this is how the government project has framed its mandate.<sup>93</sup> As Craig Wells, co-director for the Giant Mine Remediation Project Team, stated:

For me it's the question of is risk management a subset of remediation or is remediation one way to go about risk management. It's a chicken and egg question... all risk management is sort of saying is you need three elements... you need a contaminant or source, you need a pathway and you need a receptor. So if you remove any one of those three things you've eliminated the risk... and it's a balance of risks, right? So we looked at the arsenic trioxide as the single biggest issue at the site and through consultations and studies and years of working and analyzing the situation there's still nothing we can do to remove that source that doesn't pose a greater risk than what we're looking at doing now, which is encapsulating it at least until something better comes along.<sup>94</sup>

This definition reflects a risk management approach to remediation, where blocking off 'flows' mitigates the harmful effects of pollution.

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<sup>92</sup> Indian and Northern Affairs Canada and the Government of the Northwest Territories, *Giant Mine Remediation Developer's Assessment Report*, submitted to the Mackenzie Valley Environmental Impact Review Board as a part of the Giant Mine Remediation Project Environmental Assessment (EA0809-001, October 2010).

<sup>93</sup> Indian and Northern Affairs Canada, *Giant Mine Remediation Plan*, prepared by SRK Consulting and SENES Consultants Limited (2007).

<sup>94</sup> Craig Wells (Head of the Giant Mine Remediation Project Team, Ottawa Office), interview with author (May 16, 2016).

In some ways, it does make sense to limit definitions of remediation. As it stands, the project team does not have the resources or authority to dictate future land uses, or to plan for thousands of years in the future; it is concerned with safety and getting the project done. As Natalie Plato, a co-director for the GMRP, stated, it is not her right to decide how that space will be used in the future:

I want to see it remediated to the applicable standards so health and safety is protected... But in terms of how the land is used... from my government position, it's not my decision... It's such a big beautiful piece of land; it would be a shame that people couldn't use it. But then I also get the perspective like lets not forget what's there. It was a mine site.<sup>95</sup>

At the end of the day, future land use should be a community-based decision, but how the remediation is completed impacts future land uses. In addition, communities should not be responsible for providing resources to facilitate further remediation or restoration once the Project is 'finished.' As Johanne Black argued, the Project should not be allowed to "pass the buck on to other entities."<sup>96</sup>

Some interviewees, building on risk management approaches, spoke about remediation as a form of repair or rehabilitation, with multiple levels and standards. While all interviewees recognized that the site could not be restored to some kind of 'natural' state, and therefor must be 'managed,' some questioned how the 'end state' or 'level' of remediation would be determined. Dennis Kefalas, a City of Yellowknife employee, mentioned that remediation can never mean total restoration, and that "the end use is very limited in what you can do,"<sup>97</sup> therefore it is important to discuss the 'level' of

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<sup>95</sup> Natalie Plato (Head of the Giant Mine Remediation Project Team), interview with author (May 17, 2016).

<sup>96</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016).

<sup>97</sup> Dennis Kefalas (City of Yellowknife employee), interview with author (May 10, 2016).

remediation, repair or restoration that is actually achievable. Erica Janes of Alternatives

North asked how much repair, restoration or remediation is enough:

In a discussion before the surface design workshop, the translators said they couldn't use the word remediation because it means to 'fix something,' and by the very nature of the site, it's not fixable... it's not going to go back to the way it was. Then you come to okay, well, how much is enough and those questions are obviously, they're really hard to answer.<sup>98</sup>

Furthermore, many interviewees discussed and questioned the material, temporal and geographic limits of remediation, asking questions such as: "Well what's cleaning up? To what standard?"<sup>99</sup> As of yet, the GMRP has not discussed what different standards of remediation might mean and how that could be measured.<sup>100</sup> Also, as mentioned in the recent GMOB *Establishment Report*, there is no way to track the progress of remediation, because no context-based, standardized measuring mechanisms have been established.<sup>101</sup>

In addition to questions of the 'clean up' standard, the Giant Mine site will have to be monitored and maintained in perpetuity. Technical definitions of remediation usually end when the site is contained and do not encompass the reality of perpetual monitoring and care, despite the fact that most closed mine sites will require some form of active water treatment, maintenance of tailings dams, and monitoring long into the future.<sup>102</sup> At Giant Mine, the remediation is defined in phases. Phase one is 'care and maintenance,'

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<sup>98</sup> Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016).

<sup>99</sup> Tom Hoefer (Director of the NWT and Nunavut Chamber of Mines), interview with the author (June 3, 2016).

<sup>100</sup> The projects mandate is to remediate to an 'industrial standard.' This was a decision that was made in the initial Giant Mine Remediation Plan. In the Environmental Assessment, it was determined that the underground freeze and industrial standard of remediation would not be up for debate. However, the level of remediation around the town site/water front has been discussed.

<sup>101</sup> GMOB, *Establishment Report*.

<sup>102</sup> Joan Kuyek, "The Theory and Practice of Perpetual Care of Contaminated Sites," Alternatives North submission to the Mackenzie Valley Environmental Impact Review Board (July 2011).

which will end once the remediation plan has been approved, a water license is granted, and remedial activities begin. Phase two is the actual act of remediation, which includes soil treatment, installing tailings covers, and revegetating, among other things. Phase three is long term monitoring.<sup>103</sup> This phased approach to remediation doesn't define perpetual care beyond monitoring: "In this case it might be something different because we are not just monitoring, we will have to treat water right so, it's not just monitoring. So we're not really done."<sup>104</sup> The questions of how much clean-up is enough and what the temporality of the project is, or what responsibility the Co-Proponents will have in perpetuity has yet to be defined and community stakeholders are worried this will be overlooked.

Many interviewees connected definitions of remediation to the challenges of intergenerational communication and environmental justice; they want the site to be remediated to a state where future generations will know how to manage and take care of the site and will remember what happened there. Within this theme, several interviewees discussed how the land could be remediated and regulated to ensure that it is somehow 'special;' that people cannot live there, but at the same time, that the space is not forgotten about. According to George Lafferty, a community coordinator for CARD:

It's not only clean-up – the clean up process fits with a way of life. We want to clean this up, but they want to clean it up so that it's usable for future generations. Not remediation only – an approach of retaining a way of life. It is about retaining land for future generations. Not just talking about the site, but about all land, all water, all air. It is okay if the scientific and the indigenous approaches are

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<sup>103</sup> Indian and Northern Affairs Canada and the Government of the Northwest Territories, *Giant Mine Remediation Developer's Assessment Report*.

<sup>104</sup> Natalie Plato (Head of the Giant Mine Remediation Project Team), interview with author (May 17, 2016).

different or somewhat separate – but they need to acknowledge each other equally and build off each other.<sup>105</sup>

In this sense, it is important to incorporate history and traditional land use practices into definitions of remediation of Giant Mine. According to Randy Freeman, “There was a fear that future generations won’t know the story... For there to be traditional knowledge... being passed to generations, knowledge of the dangers of that mine, there have to be visual reminders... other things that trigger the story.”<sup>106</sup> As mentioned earlier, many interviewees argued that it is important to tell the stories of the Giant Mine and the Remediation Project and to incorporate the YKDFN’s Traditional Knowledge into how these stories are told.

How this site will be used and cared for by future generations is directly affected not only by how remediation is defined, but also by how the Giant Mine site is officially regulated. While the Surface Design Engagement process did take into account values and objectives for future land use, it is still unclear how this will fit into technical remediation planning or government regulation. Once the federal remediation project is complete, the Giant Mine site will revert to the status of Commissioners Land, controlled by the GNWT. However, the mine site is physically within the City of Yellowknife limits, meaning that the City can apply to lease and develop it. To many community members it makes sense to first set objectives for land use and communicating with future generations and to remediate using these community-based standards. However, there have been few discussions about how such community-based standard would fit within regulatory control of the site after remediation is ‘complete.’ There are ideas, as Rob Lok,

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<sup>105</sup> Emma Pike and George Lafferty (INAC employees, CARD), interview with author (May 31, 2016).

<sup>106</sup> Randy Freeman (YKDFN employee), interview with author (May 19, 2016).



a City of Yellowknife employee explains: “It’s not so much that you put policies in place to prevent houses, you just put policies in place to ensure another use. So, you would zone it as park and recreation or nature preserve, or we might create something new for Giant Mine, which is you know, the Giant Mine overlay.”<sup>107</sup> Community stakeholders are interested in creating a new ‘space’ for Giant Mine. However, discussions on these ‘post remediation’ issues are rarely included in definitions of remediation. At the Surface Design Workshop and throughout interviewees, community stakeholders were often unsure of how the Remediation Project is planning for future land use, perpetual care or communicating with future generations.

Across the various definitions of remediation, including discussions on risk management, remedial standards, future land use and communicating with future generations, almost all interviewees spoke about how remediation could create, or re-create *value*. While some interviewees focused on the value of communicating a complex history (leaving it grey and ugly),<sup>108</sup> some saw value in developing hiking trails, an interpretive centre, sports fields and other recreational or even residential areas.<sup>109</sup> Several interviewees talked about remediating the site to a recreational or residential standard so that it could be used for such purposes: “I think the option that remediates the tailings ponds, vegetates... fills in or otherwise deals with the pits... and can be remediated to a recreational standard. I would like to see wildlife return and berries can be harvestable

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<sup>107</sup> Rob Lok (City of Yellowknife employee), interview with author (May 9, 2016).

<sup>108</sup> William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016). Johanne Black. Also, Erica Janes and Kevin O’Reilly

<sup>109</sup> See interviews with Dennis Kefalas, Mayor Mark Heyck, David Livingstone, and Todd Slack.

again.”<sup>110</sup> The City of Yellowknife hopes to have some opportunities for development on site: “I do think there is a possible mixture of uses in terms of perhaps some industrial, some low impact recreational and some residential in the future in those areas.”<sup>111</sup>

William Lines, a YKDFN’s Giant Mine Community Liaison, argued against any kind of recreational use of the site saying: “We’ve said it a hundred times... we do not want that site to be used. We don’t want it to be disturbed. We just want the monster underground to be left and not released.”<sup>112</sup> Johanne Black, the Director of the YKDFN Land and Environment stated that, perhaps the Giant Mine site is a communication piece in itself; restoring the surface would remove this communication: “the site can serve that purpose in a big capacity if we continue to let it look like a scab in the ground that people will question why does it look like that... if we make it green and pretty, people will begin to use it and they’ll identify it in the future as a recreation area instead of a contaminated site.”<sup>113</sup> The project continues to stick to the mandate of cleaning up to an industrial standard, without saying what the possibility of future land uses might be under such a standard.

While the details of future land use are contested, there is consensus that further discussion on the social *values of remediation* needs to happen. GMRP’s Adrian Paradis talked about how Giant was originally envisioned to become a physical stabilization project: “Through the environmental assessment... a lot of the thought process changed from... only physically and chemically stable. It also needed to incorporate a lot of the

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<sup>110</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016).

<sup>111</sup> Mark Heyck, (Mayor of Yellowknife), interview with author (May 10, 2016).

<sup>112</sup> William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016).

<sup>113</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016).

values from the community.”<sup>114</sup> As Alan Ehrlich, Manager of Environmental Impact

Assessment at the Mackenzie Valley Environmental Impact Review Board, stated:

I used to think of plant reclamation particularly because I think that’s where my education went more. But now I see [remediation] as being... I want to say returning the site to a state that is acceptable by the people who use it and value it... So that’s where the acceptability threshold comes in. A smart developer will spend time not just talking about what they can do, but about what’s acceptable to the communities around them... how much change is too much... what is okay... and use that to create thresholds that they will use as a basis for design.<sup>115</sup>

Todd Slack, a former employee of the YKDFN, points out that remediation needs to be seen as an opportunity to take something negative and turn it in to something positive: “to turn that around and make that site a value... that’s a great success and that is the goal we should be setting, because this is not an industrial project where the bottom line is dollars and cents, this is a civil society project.”<sup>116</sup>

A movement towards a broader reclamation of some collectively determined value can be seen in INAC’s *Mine Site Reclamation Policy for the Northwest Territories*<sup>117</sup> and in the MVLWB’s *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*.<sup>118</sup> In this latter document, reclamation is described as: “the process of returning a disturbed site to its natural state or *which prepares it for other productive uses* that prevents or minimizes any adverse effects

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<sup>114</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

<sup>115</sup> Alan Erlich (Director, Mackenzie Valley Environmental Impact Review Board), interview with author (June 2, 2016).

<sup>116</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016).

<sup>117</sup> Indigenous and Northern Affairs Canada, *Mine Site Reclamation Guidelines for the Northwest Territories* (January 2007).

<sup>118</sup> Mackenzie Valley Land and Water Board, Aboriginal Affairs and Northern Development, *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*, November 2013.

on the environment or threats to human health and safety.”<sup>119</sup> This document goes on to describe *remediation* as: “the removal, reduction, or neutralization of substances, wastes, or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future.”<sup>120</sup> This document also outlines closure and reclamation concepts, how an objectives-based approach should be established between companies, government, regulators and community stakeholders and how closure plans should be continually updated throughout operations. However, these guidelines have not been directly applied to abandoned mines such as Giant, and are only used to direct new developments. They also tend to focus on the restoration or reclamation of economic value, instead of a discussion on social value. In addition, no large-scale mines have yet to entirely go through this new guideline/regulatory process.<sup>121</sup>

The communities of Yellowknife, N’dilo and Dettah have been asking for the GMRP to move beyond remediation for a long time now, and have been discussing this Project in terms of future land use, perpetual care and value, while the government clung to its mandate of waste containment and clean-up, without recognizing responsibility for broader, reclamation or restoration based practices. When defining what remediation meant to them, many interviewees spoke about something that goes beyond containment and management. Interviewees recognized the material limitations; the Giant Mine site will never be restored to a pre-mining state. However visions and definitions of remediation and future land uses ranged from grey and ugly scars, to golf courses, hiking

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<sup>119</sup> Emphasis added, *ibid*, 8.

<sup>120</sup> *Ibid.*, 9.

<sup>121</sup> The diamond mines such as Diavik and Ekati have a similar closure planning structure, but were developed before these guidelines were implemented. Gache Kue mine will be the first large scale development to go through this process. See Bielawski, *Rogue Diamonds* for more information on the regulatory processes for diamond mines in the NWT.

trails and museums; all reflections on remediation centered on the creation of some kind of value. A lot of discussion fell within what might be described as *stewardship* and *care*. And so, while the Giant Mine Project continues to be focused on remediation, the community is calling for the reclamation of some kind of social value, and care for future generations.

### **Caring for the Monster: Perpetual Care, Environmental Justice and Reconciliation**

*The real long term interests in the site are in the people around there and the people who use it and the people who value it... that can be more than just a utilitarian connection... it can be a very personal and spiritual connection. And so the standards of what's acceptable change from worldview to worldview and it's really important that you're using the worldview of the people who value the site.*<sup>122</sup>-Alan Ehrlich (Director at the Mackenzie Valley Environmental Impact Review Board)

The potentially very long-term storage of arsenic at Giant Mine raises difficult conceptual and practical issues around the perpetual care of the Giant Mine site. As one community member stated: "It is scary, but I don't know... that's where people get to... that's one thing that people can agree is a problem and people get to be creative."<sup>123</sup> In addition to the storage of arsenic on-site, there are pockets of contaminated soils and lake sediments surrounding the Giant Mine site. Community members are also asking that these areas be cared for and communicated more effectively.<sup>124</sup> Three prominent themes

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<sup>122</sup> Alan Ehrlich (Director, Mackenzie Valley Environmental Impact Review Board), interview with author (June 2, 2016).

<sup>123</sup> Shin Shiga (Environmental manager for the NSMA), interview with author (May 27, 2016).

<sup>124</sup> Alternatives North and the Yellowknives Dene First Nations, *From Danger to Wisdom, Perpetual Care and the Future of the Giant Mine: A Report on a Community Workshop* (Chief Drygeese Centre, Dettah, September 26-27, 2011).

emerged in discussions of perpetual care at Giant Mine: financial and regulatory responsibility, geographies of care, and temporalities of care.

As was mentioned several times in the GMOB's first annual public meeting and throughout interviews, community stakeholders have a lot of uncertainty about the reliability of funding over the next 100 years or more.<sup>125</sup> One interviewee said: "Forever is a lot of money."<sup>126</sup> While the project team sees this issue as something that can be discussed and decided upon once the surface remediation and underground freeze are complete, many community members think that perpetual care planning should be happening alongside technical remediation, so that these discussions can inform the material nature of clean-up and planning for long-term funding and stewardships programs.<sup>127</sup> There is an underlying concern that once the technical remediation is complete, responsibility to plan for future land uses and communicating with future generations will be forgotten or considered less important.

Perpetual care will also entail the management of the cumulative effects of mining, including off-site contamination. As discussed above, the remediation project is contained to the lease boundary. While the scope of the project is limited to the lease site, an increasing amount of research, awareness and news articles about off-site contamination has led many stakeholders to argue that more should be done off-site.<sup>128</sup> "if

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<sup>125</sup> Taken from my personal notes, May 16, 2017.

<sup>126</sup> Ryan Fequet (Director of the Wek'eezhii Land and Water Board), interview with author (June 6, 2016).

<sup>127</sup> The City has been pushing for the development of a Land Use Plan alongside the remediation planning process, but nothing has been finalized. The City of Yellowknife completed a Land Use Plan. The City is focused on development the lakeshore area. However, the YKDFN do not agree that the site should be developed at all in the future.

<sup>128</sup> M.J. Palmer, J.M. Galloway, H.E. Jamieson, R.T. Patterson, H. Falck and S.V. Kokelj, "The concentration of arsenic in lake waters in the Yellowknife area," Northwest Territories Geological Survey, Department of Industry, Tourism and Investment (NWT Open File: June, 2015); Heather Jamieson, "The

they're going to earn people's trust I think they're going to have to go further. Like they've gone far and that's great, but there's more and the more people find out about it, the more people are going to be aware of this arbitrary lease boundary and how crazy that is.”<sup>129</sup> Contamination does not recognize lease boundaries, and remediation plans should be structured around the geography of the contamination, rather than arbitrary lease boundaries. As one YKDFN members stated: “the contamination will always be there cause they're not going to clean up outside the lease and so clean fish go in, dirty fish come out.”<sup>130</sup>

However, recognizing the limits, scope and mandate of the Giant Mine Remediation Project today, in order to address off-site contamination, “there will have to be some negotiated arrangement.”<sup>131</sup> As of yet, there has just been what one board member on the GMOB, calls an “awkward silence,”<sup>132</sup> when community members and stakeholders question who will have responsibility for off-site contamination and how this will be managed. Several interviewees called on the GNWT to act and while the GNWT has released health advisories, and has provided some information and recommendations on contaminated lakes, the parameters of determining what authorities will be responsible, and whether a remediation or risk management, or a combination

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Legacy of Arsenic Contamination from Mining and Processing Refractory Gold Ore at Giant Mine, Yellowknife, Northwest Territories, Canada,” *Reviews in Mineralogy and Geochemistry*, 79 (2014): 533-551; Joshua Thienpoint, Jennifer Korosi, Kathryn Hargan, Trisha Williams, David Eickmeyer, Linda Kimpe, Michael Palmer, John Smol, Jules Blais, “Multi-trophic level responses to extreme metal contamination from gold mining in a subarctic lake,” *Proc. R. Soc. B* 283 (2016).

<sup>129</sup> Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016).

<sup>130</sup> William Lines (Giant Mine Committee Liaison for the YKDFN), interview with author (May 18, 2016).

<sup>131</sup> David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016).

<sup>132</sup> Tony Brown (GMOB Director), interview with author (May 25, 2016)

approach is needed, is still unclear.<sup>133</sup> As Shin Shiga, the environmental manager for NSMA, remarks, “It’s not a Giant Mine problem, it’s a much higher up problem.”<sup>134</sup>

While it may not be the project team’s direct responsibility to clean up this site, in regards to gaining and maintaining the trust of community members and stakeholders, the GMOB recommends that some kind of negotiated decision seems to be in their best interests.<sup>135</sup>

In connection to the broader geography of contamination around Giant Mine, the remediation project is also difficult to conceptualize temporally. Not only are there important historical legacies that have not been addressed through the GMRP, the thought of perpetual care and oversight is difficult to reckon with. The project team, understandably, is most concerned with getting through the next two or three years, “to actually get a license and everything and actually get into construction... the longer it goes the more things change.”<sup>136</sup> While there is a rush to ensure the site is contained and managed as soon as possible, there is also a push to ensure that this is done right, and that all stakeholders and rights holders have power over future land uses, and perpetual care and management. Some project team and community members find it hard to determine the best order of priorities:

I think that what’s happened though is people who have... become part of this body of communicating with future generations almost have it reversed. Like they think, hey we need to make decisions so that we can communicate them to future generations and really we need to make decisions and then decide how it gets communicated... that was a really strong message that we had to deliver at surface

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<sup>133</sup> Interviews with: David Livingstone (former INAC employee, GMOB Director), interview with author (May 13, 2016); Brown, Tony (GMOB Director), interview with author (May 25, 2016); Erica Janes, (former manager for the Giant Mine file for Alternatives North), interview with author (May 16, 2016); Kevin O’Reilly (MLA and former representative for Alternatives North), interview with author (May 13, 2016).

<sup>134</sup> Shin Shiga (Environmental manager for the NSMA), interview with author (May 27, 2016).

<sup>135</sup> Tony Brown (GMOB Director), interview with author (May 25, 2016); GMOB, *Establishment Report*.

<sup>136</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).



design as well, that regardless... the decisions come first and then how you communicate it comes second.<sup>137</sup>

It is difficult to balance the need to ‘get things done’ and the need to plan for a perpetual problem without marginalizing stakeholders. The project team has yet to confront what is means to care for a mine site in perpetuity. Financial and regulatory responsibility for perpetual care is uncertain. Going forward, the GMOB has the potential to play an important role in facilitating discussion on perpetual care and it provides a structure for research and communication over the next 100 years.<sup>138</sup>

### Reconciliation

Not only does perpetual care imply planning for the care of the Giant Mine site, it also implies care for relationships between people and their environment. As mentioned earlier, if remediation is to bring about environmental justice, it must be seen as a process of rebuilding relationships. Tsosie writes that reconciliation is defined as the “restoration of friendly relations.”<sup>139</sup> Reconciliation is particularly important in the colonial context of resource extraction in Northern Canada, as it related to the historical and contemporary relationships between settlers and Indigenous communities. According to Tsosie, reconciliation makes space for Indigenous memories and accounts of harm to be meaningfully addressed and for Traditional Knowledge to be taken seriously.<sup>140</sup>

Remediation, within the context of reconciliation, offers an opportunity to not only

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<sup>137</sup> Sharon Low (Giant Mine Remediation Project Team, community engagement officer), interview with author (May 17, 2016).

<sup>138</sup> GMOB, *Establishment Report*.

<sup>139</sup> Rebecca Tsosie, “Indigenous Peoples and the Ethics of Remediation: Redressing the Legacy of Radioactive Contamination for Native Peoples and Native Lands Indigenous Peoples and the Ethics of Remediation,” *Santa Clara Journal of International Law* 13, no. 1 (2015): 271.

<sup>140</sup> Ibid.

restore or repair contaminated land, but to restore relationships and to implement better forms of care. As Murphy argues, reconciliation can be initiated through official apologies, which document historical injustices, acknowledge responsibility, restore relations and offer a path forward to trust and respect.<sup>141</sup>

The YKDFN see the remediation process as intertwined with land claims, reconciliation and calls for apology and compensation. According to Fred Sangris: “The land claim will cover compensation for the loss of the land at the mine. But it’s not going to compensate the loss of the people, the death, the grief, and for many years of sadness in this community. And we can never fish on this bay again. We can’t go and eat berries here. For us, it’s lost forever.”<sup>142</sup> Tony Brown, a GMOB Director, spoke about how the Akaitcho land claims process is “such a huge silent element in the back of the room with this project.”<sup>143</sup> The project team continually argues that apology and compensation is not a part of their mandate, but as Brown mentions:

I get it, they don’t deal with it, but it’s affecting their project and I’m surprised that there isn’t more clear you know institutionally that there isn’t a linkage there Maybe there is behind closed doors where they talk about how to deal with these things, but certainly on the surface, it’s... looking at it cynically... the divide and conquer type thing. It’s obviously frustrating for the YKDFN.<sup>144</sup>

Community stakeholders want the Project Team to plan for remediation within the broader context of reconciliation processes.<sup>145</sup>

Remediation also has the potential to offer economic opportunities that could be seen as a part of the reconciliation process. Adrian Paradis stated that: “There’s a lot of

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<sup>141</sup> Michael Murphy, “Apology, Recognition and Reconciliation,” *Human Rights Review* 12 (2010): 47-69.

<sup>142</sup> Fred Sangris (YKDFN member and employee), interview with author (June 8, 2016).

<sup>143</sup> Tony Brown (GMOB Director), interview with author (May 25, 2016).

<sup>144</sup> Ibid.

<sup>145</sup> Bill Slater (Giant Mine Working Group technical advisor), interview with author (June 23, 2016).

money to be made on Giant... it's a short term economic stimulus to the local economy in times where there's... especially right now when the mining sector has been slower, Giant can be a stopgap. The real thing we were challenged... we were trying to discuss, we that we really want to ensure the best training opportunities for locals here in the community, especially First Nations, it's part of Aboriginal Affairs mandate.”<sup>146</sup>

However, a lot of these opportunities will be short term, or seasonal contracts: “it's a struggle to figure out how you marry those lofty goals, or good goals of getting the best possible training out of it with just the way the contracting works.”<sup>147</sup> According to the YKDFN, job and contract opportunities with the Giant Mine Remediation Project, and monitoring or maintenance after remediation is complete is an important part of working towards reconciliation, apology and compensation; it is a way to “get something out of that site that is good.” According to Johanne Black, the Director of Land and Environment for the YKDFN: “in terms of the wellness of the people... I believe that the project can help us... that project alone can help us in terms of making our people well. We've had a lot of impacts in the past, we've had a lot of social dysfunction... a whole host of problems that could be alleviated out of the economies that come out of Giant.”<sup>148</sup> Black also stated that, “those economies will be forever, in terms of remediation and then eventual monitoring. Monitoring is going to be forever,” and the YKDFN should play a prominent role in that long-term care and the economic benefits of remediation itself.<sup>149</sup>

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<sup>146</sup> Adrian Paradis (former Giant Mine Remediation Project manager) interview with author (June 7, 2016).

<sup>147</sup> Ibid.

<sup>148</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016).

<sup>149</sup> Ibid.

Throughout the four days of the Surface Design Engagement Evaluation Workshop in February, 2016, multiple people from both the YKDFN and the broader Yellowknife community made references to the importance of reconciliation as a part of the remediation process. These sentiments were reflected in the GMOB's Establishment Report, published in April 2017:

The Project Team has not effectively and meaningfully responded to the YKDFN's continuing demand for a formal apology and compensation for past harm from the Giant Mine operations. These demands seem to have been largely ignored despite the Government of Canada's current commitment to reconciliation with Indigenous peoples. The GMOB is of the view that a formal apology would help to heal the harms of the past and greatly facilitate the ability of the Parties to move forward together. Failure to address the issues of a formal apology and a commitment to compensation are likely to affect the success of community engagement and the future of the remediation project.<sup>150</sup>

Since the government took over the Giant Mine site, there has been little movement towards reconciliation through the Giant Mine Remediation Project and there has never been an official apology.

Within the context of the Truth and Reconciliation Commission (TRC), reconciliation, apology and compensation are an important precedent for the project to set.<sup>151</sup> The TRC is about honouring the past, and negotiating a better future, similar to what many YKDFN members have asked for at the Giant Mine.<sup>152</sup> For one YKDFN member, to date, the remediation project has not unfolded with reconciliation in mind because the project was forced through environmental assessment and an environmental agreement – the governments were dragged through this process by the community, and

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<sup>150</sup> GMOB, *Establishment Report*, 17.

<sup>151</sup> Truth and Reconciliation Commission, *Honouring the Truth, Reconciling for the Future: Summary of the Final Report of the Truth and Reconciliation Commission of Canada* (2015).

<sup>152</sup> Ibid.

did not voluntarily enter into agreements. According to Johanne Black, “it would be sad if at the end of the remediation project if the Yellowknives are still... they’re not in a better state in terms of our social well being. That will be really sad, because the opportunity could have been available.”<sup>153</sup> While there are now annual healing ceremonies at the Giant Mine supported by the GMRP,<sup>154</sup> this is not enough: “We have a feeding the fire ceremony. In our culture we feed the fire with food, tobacco and we say our own prayer. And that promotes healing. It also promotes communication... it’s a good relationship building with the project. It’s a good ceremony, but in terms of healing, there needs to be more than just a once a year ceremony.”<sup>155</sup>

Can remediation be seen as a reconciling act in itself? Reconciliation questions surrounding Giant Mine include many other mechanisms, such as: land claims, legal compensation, an official apology, and future management and land use of the site. It is a multi-faceted issue. The Project Team itself often seems stalled because of their limited mandates; it does not have the authority to discuss issues of land claims, apologies, compensation or reconciliation. These discussions happen with other federal departments, and communication between these processes is often unclear. The fact that there has been no official apology, or compensation, or that the off site-contamination has not been addressed, or that the perpetual care of the site is still uncertain – all of these issues damage trust between community, First Nations and the project team. While the project team itself does not have the capacity to deal with all these issues on its own, the

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<sup>153</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016).

<sup>154</sup> GMRP, “What’s happening at Giant Mine Newsletter,” published monthly: <https://www.aadnc-aandc.gc.ca/eng/1374777790923/1374777851043>

<sup>155</sup> Johanne Black (Director of the YKDFN Land and Environment Department), interview with author (June 8, 2016).

community seems to be calling on other federal departments, and the GNWT to take some responsibility at Giant. The GMRPT often repeats that anything related to compensation needs to be discussed through the land claims processes. However, as Todd Slack, a former employee of the YKDFN, stated, “when we talked to negotiators, it’s not clear and part of that failure is with the negotiations to make that abundantly clear as to where this lies and who has the action... whose court the ball is in.”<sup>156</sup> The YKDFN have yet to finalize a land claims agreement. The uncertain nature of this agreement limits the YKDFN’s resources to make decisions regarding Giant, and continues to be a large hurdle in the way of reconciliation and planning for future land uses and perpetual care.

## **Conclusion**

Since the signing of the Giant Mine Remediation Environmental Agreement in June 2015, the GMRP and the community stakeholders have begun to work together to confront and care for the Giant Mine Monster. After a long history of injustice, marginalization and environmental degradation, community stakeholders are now more closely involved in the remediation planning process. The Environmental Agreement provided a roadmap of community-based objectives for remediation and the GMRP has been changing to fit these objectives. The frozen block method is also now seen as an interim solution. Community stakeholders, in conjunction with the Giant Mine Oversight Board will continue to have a role in the remediation and care of the Giant Mine as more research is done and the remediation project is regularly reviewed over the next 100 years. This new approach to remediation was epitomized in the Surface Design Workshop

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<sup>156</sup> Todd Slack (former YKDFN employee), interview with author (May 26, 2016).

help in February 2016. In this workshop, stakeholders were able to set objectives for surface remediation, evaluate options, and provide comments on how to improve the options. In addition, the GMRPT now holds regular, monthly meetings with both the Giant Mine Working Group (which includes all stakeholder groups) and the Giant Mine Advisory Council (hosted by the YKDFN). Moving forward, the Human Environmental Monitoring Program and the Health Impact Assessment will provide valuable research and opportunities for ongoing monitoring. These processes have all contributed to a remediation project based on more consistent, ongoing discussion with community stakeholders.

The Surface Design Engagement process was ground-breaking in the sense that it was the first opportunity for community stakeholders to have a say in the design of remediation options. More specifically, the surface design process highlighted the need for more discussion on future land uses, as stakeholders had different expectations for what the land will be used for in the future. As Francaviglia and Robertson argue, due to differences in historical experiences and community values, landscape identities can be fractured and controversial.<sup>157</sup> While healing the past, remediation must also foster a new sense of place and a new sense of value.<sup>158</sup> Negotiations about future land uses are fundamental to healing the past and will require a consensus on what kind of story will be told and how the Giant Mine site will be remembered. According to Ben Nind, this is about cleaning up a mess that is “very close to colonization,” or even “cleaning-up

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<sup>157</sup> Richard V. Francaviglia, *Hard Places: Reading the Landscape of America's Historic Mining Districts*, (Iowa City: University of Iowa Press: 1991); David Robertson, *Hard as The Rock Itself: Place and Identity in the American Mining Town* (Colorado: University of Colorado Press, 2006).

<sup>158</sup> Laura Smith, “On the ‘Emotionality’ of Environmental Restoration: Narratives of Guilt, Restitution, Redemption and Hope,” *Ethics, Policy & Environment* 17, no. 3 (2014): 286–307.

colonization.”<sup>159</sup> It is about making the connections between physical healing and community healing: “If we had a process that people trust, that results in multiple communication tools: digital, monuments, arts... each one is a step towards people coming together.”<sup>160</sup> This is a site of a great intersection of interest, history, present tensions, and future possibilities: what happens on site has an affect on community psychology. Therefore, many interviewees saw the remediation project and the GMOB as a great opportunity for hope, and to make something positive happen.

In connection to the Surface Design Engagement process, the GMOB provides a space for community discussion. Independent oversight of the GMRP facilitates an environment of accountability and trust building. In addition, the GMOB is essential to concerns about perpetual care, as it is mandated to provide oversight and funding for ongoing research for at least 100 years. Mayor Mark Heyck stated that:

We now have a forum where we all have a seat at the table, including First Nations and Métis people, which I think is really important from that aspect of having a longer term vision for the community, which again is stepping away from the technically scientific side of things, but understanding how we will work together with these other parties that occupied this area long before the rest of us did.<sup>161</sup>

However, since the GMOB is strictly an advisory body, going forward it will be important that the GMRP meaningfully responds to recommendations in order to ensure continued trust.

Today, community stakeholders seem to have more trust in the GMRP. However, as interviewees reflected on the Giant Mine Remediation Project, four themes continually

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<sup>159</sup> Ben Nind (Executive Director of the Giant Mine Oversight Board), interview with author (May 31, 2016).

<sup>160</sup> Ibid.

<sup>161</sup> Mark Heyck (Mayor of Yellowknife) interview with author (May 20, 2016).



arose: independent oversight, off-site contamination, perpetual care and apology/reconciliation. While the Environmental Agreement and the GMOB have set up structures for independent oversight and have facilitated discussion on perpetual care, the issues of off-site contamination and apology/reconciliation have yet to be confronted. These concerns will need to be addressed in order to build and maintain trust. As several interviewees expressed, the legacy of the Giant Mine cannot be fully addressed until there is responsibility taken for off-site contamination and there is an apology and move towards reconciliation for the YKDFN. Discussion on legacy, environmental justice, off-site contamination, apology and reconciliation situates the Giant Mine Remediation Project on a broader temporal scale and recognizes the cumulative, ongoing impacts of not only the mine waste, but also the relationships developed around this waste. Building reminders of this history into the remediation process – be that through an interpretive center, an ‘ugly’ landscape, a memorial, a park, a library or an official apology – is essential to what community stakeholders see as a broader ‘healing’ of the Giant Mine site and the surrounding environment.

## CHAPTER 6

### CONCLUSION: REMEDIATION AS RELATIONAL

*“For many people, Giant Mine is an engineering problem. For me, Giant Mine is a story of relationships failed: relationships towards people, the land, and especially future generations. Trust has been eroded, and it will take many years for it to be restored, if ever.”*

*-Frances Benoit (Giant Mine Remediation Public Hearings, Sep. 2012)*

In 2005, as a part of its Traditional Knowledge Report for the Giant Mine Remediation Plan, the YKDFN stated: “The Giant Mine Legacy is coming full circle. From the discovery of gold, to its extraction and refinement, to the mine’s closure and reclamation.”<sup>1</sup> The Report’s stated aim was to “add one last step; that of helping restore relationships with the land and giving back to the land its story, and sharing that story with Yellowknife.”<sup>2</sup> This last step has yet to be realized. There is still a tendency to frame the Giant Mine Monster in technical terms; as numbers, figures and risk assessments that can be contained and managed. Increasingly, through the insistence of the YKDFN and other Yellowknife community members, the Giant Mine Remediation Project is beginning to be conceptualized as a “story of relationships between people and the environment, and between cultures learning to co-exist.”<sup>3</sup>

In this thesis I traced the historical geography of arsenic trioxide contamination and its remediation at Yellowknife’s Giant Mine. Through archival documents, reports, news articles, interviews and participant observation this study illuminated the story of

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<sup>1</sup> Yellowknives Dene First Nation Land and Environment Committee, *Giant Mine – Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*, prepared for the Department of Indian and Northern Affairs Giant Mine Remediation Project (October 13, 2005), 6.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid., 5.

the Giant Mine Remediation Project, from the creation of the Giant Mine Monster, to the containment of the Monster, to the confrontation and care of the Monster. The Giant Mine was created within a broader colonial, industrial context that favoured settler-based, economic development and marginalized First Nations. Specifically at the Giant Mine, the government and the mining company, setting a precedent of secrecy, largely ignored early signs of health risks and pollution. Throughout operations, while pollution controls and regulations increased, community concerns about arsenic trioxide and environmental degradation were continually downplayed in favour of maintaining the status quo. Remediation plans were minimal and focused on the economic value a company could extract from a site after closure.

When Royal Oak went bankrupt in 1999, it left the communities of Yellowknife, Dettah and N'dilo with feelings of bitterness and mistrust over past injustices. However, when the federal and territorial governments took over, they did little to heal these injustices, but rather continued operating within a system of marginalization, while focusing only on the containment of the underground arsenic trioxide. Again and again, community members were told that their concerns were not within the scope of the Giant Mine Remediation Project, which focused on technical containment. Early attempts at community consultation were fragmented and those who did participate were again disappointed to see that their concerns were not reflected in the 2007 Remediation Plan. These failures at effective communication exacerbated feelings of mistrust that lingered from the days of mining operations. It is during these initial years of government remediation planning that three prominent community concerns began to take shape: independent oversight, off-site contamination and perpetual care. The failure of the

GMRP to cooperate with community stakeholders in addressing these concerns pushed stakeholders to force the Project through an environmental assessment.

Finally, through a long and gruelling environmental assessment process, community concerns began to be recognized. Again, the Environmental Assessment began with a limited, technical scope. However, community stakeholders relentlessly fought for a broader definition of remediation that included independent oversight, a discussion about the cumulative effects of mining off-site, and perpetual care. In the public hearings, all community stakeholders recognized the importance of a comprehensive technical solution, and that the frozen block method might be the best available option. However, the community was saying, and had been saying for over a decade, that their cause for concern was that remediation needed to be defined and negotiated within a local, community-based context in order to address the political structures that allowed for such destruction in the first place. Containment of the monster wasn't enough; the community demanded that the legacy of the Giant Mine be confronted, and that, going forward, the relational aspects of remediation be cared for. The Environmental Agreement and the creation of the GMOB provide a roadmap for community stakeholders to direct remediation projects and to create value in a degraded environment.

Typically, the story of the Giant Mine has been characterized as a toxic monster, a story of contamination, degradation, injustice and marginalization. However, through the hard, relentless work of concerned community members and the YKDFN, their demands for justice, and their discussion of perpetual care, it has become a story of hope. This hope does not diminish the very real, ongoing issues that continue to haunt this

community, such as off-site contamination and reconciliation, but rather acknowledges the good that has been done, the relationships that have been built and the systems that have begun to be put in place in order to ensure a better future. In order to recognize the capacity, ability and care of the community for this land and for the people in relationship with this land, care, hope and relationships must be continually re-evaluated in the context of perpetual care. The Giant Mine Monster is much more than just arsenic. It is a legacy of relationships that will require continual care.

While remediating the Giant Mine site may go a long way towards regaining a feeling of safety, how the remediation is done is very important to the community because of the conflictual history of the mine. Open discussions on how the mine is fixed, who will fix it, who will care for it far into the future, and how the objectives of remediation are determined can go a long way towards addressing larger social issues of mistrust, colonial relationships, racism and marginalization; in these ways, remediation is historical and political. In addition, a gap in existing laws and regulations continues despite improvements as both mining and environmental laws assume that there is a responsible party available and that financial securities will be sufficient. The laws implicitly presume that abandoned mines simply do not come into existence and there are no mechanisms to address them besides an emergency response led by the government.<sup>4</sup>

In 2007, right before the publication of the Giant Mine Remediation Plan, there was an unauthorized water discharge from the water treatment facility with elevated

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<sup>4</sup> Anne Dance, "Northern Reclamation in Canada: Contemporary Policy and Practice for New and Legacy Mines," *The Northern Review* 41 (2015): 41-80.

levels of arsenic.<sup>5</sup> The new care and maintenance operator, Deton'Cho/Nuna Logistics Joint Venture was unfamiliar with how this particular valve worked, meaning that it had not been closed properly and water was unknowingly discharged.<sup>6</sup> Incidents such as this illuminate the day-to-day difficulties of remediating and caring for such a site. Small human errors, the challenge of passing down intimate, experiential details of site maintenance and care from one person to another, and the changing nature of the site and the people who work there, can cumulate into disastrous effects for the surrounding environment and community. Over the decades and centuries, the day-to-day care, repair, remediation and restoration activities on this site will change. What many Yellowknife community members and local First Nations are worried about is that this site will become unknown, forgotten about, abandoned, and that their history of contamination will be forgotten as well. In this sense, the Giant Mine Remediation Project represents an opportunity to confront the historical legacies of contamination and colonialism, to come together to contain, manage and care for the land that was destroyed and to look forward for ways to ensure this site is cared for in perpetuity and that relationships are rebuilt.

Rethinking remediation as something relational is to see remediation as the day-to-day care of a contaminated space. Recognizing care, the relationships created through land, and the maintenance of that land can “reframe how we approach material vulnerability, not as something to be avoided, dismissed or repaired, but as something to

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<sup>5</sup> Letter from Scott Stewart, Water Resource Officer, Department of Indian Affairs and Northern Development, to Bill Mitchell, Manager, Giant Mine Remediation Project, “RE: Unauthorized discharge of treated minewater at Giant Mine,” (September 18, 2007).

<sup>6</sup> Letter from Deton-Cho/Nuna Joint Venture to Scott Stewart, INAC Water Resources Officer, “RE: Unauthorized Discharge of Treated Mine Water at Giant Mine” (September 18, 2007).

think more responsibly.”<sup>7</sup> This responsibility, in the case of the Giant Mine Remediation Project, has had a lot to do with re-building trust through consistent community engagement. In connection to environmental justice theory, and as Horowitz argues, the ability to control the objectives of research and the institutions that implement research is fundamental to trust, “as trust is intimately linked to peoples’ own capacity to influence and alter these institutions.”<sup>8</sup> In general, the Giant Mine case shows that engagement for mine closure needs to start with a definition of remediation objectives on a community level. There needs to be a basis of common understanding and recognition of the importance of local and traditional knowledge. Since communities will live with mine wastes in perpetuity, it becomes especially important to ensure that the community defines how this process happens from day one. A commitment to daily care can be incorporated into broader community engagement goals and is important for Yellowknifers and the YKDFN to take a hold of. Community stakeholders should have structural and financial support in determining future land uses and perpetual care.

Healing landscapes and relationships means rethinking remediation in combination with restoration, justice and perpetual care. Anna Storm, in her book *Post-Industrial Landscape Scars* uses ‘scabbing and scarring’ metaphors to investigate processes of landscape and community healing. She argues that ‘scabs’ are unhealed landscapes that represent unsettled, contested meanings. A landscape ‘scab’ is open to interpretation and struggles over hierarchies and can remain scabs for a long time if there

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<sup>7</sup> Jerome Denis and David Pontille, “Beyond breakdown: Exploring Regimes of Maintenance,” *continent* 6, no. 1 (2017): 15.

<sup>8</sup> Horowitz, Leah. “‘Twenty Years Is Yesterday’: Science, Multinational Mining, and the Political Ecology of Trust in New Caledonia.” *Geoforum* 41, no. 4 (2010): 617.

is no space for healing and recovery.<sup>9</sup> The Giant Mine Remediation Project has remained a scab for such a long time because, with a focus on arsenic management alone, there has been no space for healing and recovery. The Project did not confront the multi-faceted monster that is the Giant Mine. Rethinking remediation alongside concepts of restoration, justice and perpetual care implies an ongoing process of negotiation of hierarchies, morals, values and objectives. Therefore, remediation is a creative opportunity to negotiate how the space will be remembered, valued and cared for in the future.

In mining, a space that is abandoned has been un-carefully treated.<sup>10</sup> Care is not only about day-to-day maintenance, but also about an ethical obligation to care for things and take responsibility for our technologies and our waste.<sup>11</sup> As Puig de le Bellacasa states, “it is not a technology that is unethical if it fails or becomes a monster, but rather to stop caring about it, to abandon it as Dr. Frankenstein abandoned his creation.”<sup>12</sup> We need to care for and take responsibility for our technologies, even if they seem to have failed us. Caring for the Giant Mine and the relationships it has created presents a creative, reflexive, dynamic addition to the technical waste management practices that already exist and offers new ways to think about approaches to remediation, restoration and long-term care of contaminated sites. As Dr. Gilchrist stated in the Giant Mine Remediation public hearings not only does perpetual care planning need to investigate technical methods of long-term maintenance, it also needs to consider: “perpetual caring, perpetual caring for people... beyond some of the very physical, technical stuff that we

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<sup>9</sup> Anna Storm, *Post-Industrial Landscape Scars* (New York, NK: Palgrave Macmillan, 2014)

<sup>10</sup> Manuel Tironi, personal communication, October 7, 2016.

<sup>11</sup> Puig de la Bellacasa, M. “Matters of Care in Technoscience: Assembling Neglected Things,” p. 90.

<sup>12</sup> Ibid.



have seen here.”<sup>13</sup> Matters of care can be used as an umbrella to combine the material focuses of remediation, the moral-ethical focuses of ecological restoration, and the long-term maintenance of the Giant Mine, within an environmental justice framework that continually questions, critiques and tinkers with power relations, inequalities, geographies, temporalities and values/perspectives of waste and mining landscapes. Arguably, the creation of the Giant Mine Oversight Board provides a foundation for this kind of long-term care. While there are many barriers and challenges at the Giant Mine, this case presents an opportunity to think through and discuss the implications of perpetual care of mine wastes.

This research on Giant Mine remediation is significant because it illustrates that remediation does not always implicitly lead to environmental justice. As Tsosie states, science and resource extraction policy tend to “omit the experiences of harm as spiritual and cultural.”<sup>14</sup> However, justice can be sought through community engagement and leadership in remediation. More than this, at the Giant Mine, environmental injustices are fundamentally linked to the YKDFN’s experiences of colonization and racism. Therefore, this thesis concludes that remediation projects across Canada need to account for broader processes of reconciliation, as it applies to relationships with both First Nations communities and their traditional lands. This research also aims to contribute to the ongoing discussion on best practices for mine remediation and restoration in Canada, with an increased focus on the importance of community engagement in remediation and the

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<sup>13</sup> MVEIRB, “Giant Mine Remediation Project Environmental Assessment Hearing, Part 5 of 5” (Yellowknife: September 13, 2012), 37.

<sup>14</sup> Rebecca Tsosie, “Indigenous Peoples and the Ethics of Remediation : Redressing the Legacy of Radioactive Contamination for Native Peoples and Native Lands Indigenous Peoples and the Ethics of Remediation,” *Santa Clara Journal of International Law* 13, no. 1 (2015): 271.

discussion of long term care for toxic sites. Looking forward, remediation is important beyond just mining and the Giant Mine. There are much larger questions to be addressed about our relationships with the waste and contaminated landscapes that we create and how we care for them. Further research on remediation needs to investigate the broader, cumulative implications of mine waste that cannot be contained easily in time or space.

The Giant Mine Remediation Project forces us to think beyond the normalized ‘life cycle’ of a mine as exploration, operation, remediation and closure to something *beyond remediation* – a recognition of the necessity for structures that facilitate the ongoing and dynamic processes of monitoring and maintenance programs, community dialogue, education and stewardship of the land. Without a community objectives-based approach to remediation, mine remediation risks continuing systems of degradation and marginalization that allowed for such destruction to happen in the first place. However, the Giant case also illustrates the potential for community activism to shift remediation to include social issues such as environmental justice, reconciliation and intergenerational equity. Within this context of healing, relationality and care, the Giant Mine example pushes us to think beyond the actual act of remediation towards a focus on the ongoing processes of trust building, reconciliation, environmental justice and perpetual care for humans and nonhumans alike. Remediation at the Giant Mine can confront and care for the monster in all its forms.

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Yellowknives Dene First Nation (YKDFN) Land and Environment Committee, *Giant Mine – Our Story: Impact of the Giant Gold Mine on the Yellowknives Dene, A Traditional Knowledge Report*. Prepared for the Department of Indian and Northern Affairs Giant Mine Remediation Project (October 13, 2005).

YKDFN (Chief Jonas Sangris and Chief Fred Sangris). “Letter to Minister Jane Stewart, INAC” (EA0809-001: April 8, 1999).

YKDFN. “RE: Type “A” Water License Application/INAC Giant Mine Remediation.” Letter to Mr. Willard Hagen, Mackenzie Valley Land and Water Board (January 18, 2008).

YKDFN. “RE: Giant Mine, MV2007L8-0031.” Letter to the Mackenzie Valley Land and Water Board, (March 11, 2008).

YKDFN. “RE: Invitation to Provide Comments on the Giant Report of EA.” Letter to Matt Spence, Director General of the Northern Projects Management Office (August 15, 2013).

## APPENDICES

### Appendix I: List of Interview Participants

DATE (2016)	NAME	AFFILIATION	INTERVIEW TYPE	LOCATION
May 9	Rob Lok	City of Yellowknife	Individual	Yellowknife
May 10	Mayor Mark Heyck	City of Yellowknife	Individual	Yellowknife
May 10	Dennis Kefalas	City of Yellowknife	Individual	Yellowknife
May 11	Natalie Plato	Giant Mine Remediation Project Team	Individual	Yellowknife
May 13	Kevin O'Reilly	MLA Frame Lake, Alternatives North	Individual	Yellowknife
May 13	David Livingstone	GMOB Director	Individual	Yellowknife
May 16	Erica Janes	Alternatives North	Individual	Yellowknife
May 16	Craig Wells	Giant Mine Remediation Project Team	Individual	Yellowknife
May 17	Mike Auge	City of Yellowknife	Individual	Yellowknife
May 17	Sharon Low	Giant Mine Remediation Project Team	Individual	Yellowknife
May 17	Walt and Diane Humphries	Yellowknife Mining Heritage Society	Group	Yellowknife
May 19	Randy Freeman	YKDFN, Lands and Environment Employee	Individual	N'dilo
May 19	William Lines	YKDFN Member and Land and Environment Employee	Individual	N'dilo
May 25	Tony Brown	GMOB Director	Individual	via. Skype
May 26	Todd Slack	Former employee of the YKDFN Lands and Environment Department	Individual	Yellowknife
May 27	Gordon Hamre	Alternatives North	Individual	Yellowknife
May 27	Shin Shiga	North Slave Metis Alliance	Individual	Yellowknife
May 31	Ben Nind	GMOB, Executive Director	Individual	Yellowknife
May 31	Emma Pike and George Lafferty	INAC, Contaminants and Remediation Directorate	Group	Yellowknife
May 31	Lisa Dyer and Erika Nyssonnen	Government of the Northwest Territories, Environment and Resources	Group	Yellowknife
June 2	Alan Erlich	Mackenzie Valley Environmental Impact Review Board	Individual	Yellowknife
June 3	Tom Hoefer	NWT and Nunavut Chamber of Mines	Individual	Yellowknife



June 3	James Lawrence	INAC	Individual	Yellowknife
June 6	Ryan Fequet	Wek'eezhii Land and Water Board	Individual	Yellowknife
June 7	Adrian Paradis	Former manager for the Giant Mine Remediation Project Team	Individual	Yellowknife
June 7	Ken Hall	GMOB Director	Individual	Yellowknife
June 8	Tyree Mullaney	Mackenzie Valley Land and Water Board	Individual	Yellowknife
June 8	Johanne Black	YKDFN Member and Director of the Land and Environment Department	Individual	N'dilo
June 8	Fred Sangris	YKDFN Member and employee of the Land and Environment Department	Individual	N'dilo
June 23	Bill Slater	Technical Consultant for the Stakeholders of the Giant Mine Remediation Project	Individual	via. Skype

## Appendix II: Sample Consent Form



**Informed Consent Form for Research**  
***Rethinking Remediation:***  
***Mine Closure and Reconciliation in Northern Canada***

**Researcher:** Caitlynn Beckett, Master's Candidate, Memorial University, 9 Spencer Street, St. John's, Newfoundland, A1C 4H1, [clb268@mun.ca](mailto:clb268@mun.ca), (306) 491-2672.

**Supervisors:** Dr. Arn Keeling, Memorial University, [akeeling@mun.ca](mailto:akeeling@mun.ca), (709) 864-8990

Dr. John Sandlos, Memorial University, [jsandlos@mun.ca](mailto:jsandlos@mun.ca), (709) 864-2429

You are invited to take part in a research project entitled "Rethinking Remediation: Mine Closure and Reconciliation in Northern Canada."

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Caitlynn Beckett, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

**Introduction:**

As part of my Master's research in geography at Memorial University, I, Caitlynn Beckett, am conducting research under the supervision of Dr. Arn Keeling and Dr. John Sandlos. This project is part of a larger SSRHC funded project, "Northern Exposures: Science, Indigenous People and Northern Contaminants" at Memorial University, which includes co-investigators across Canada.

**Purpose of study:**

This project examines mine remediation processes in the Canadian sub-Arctic and investigates how local communities become involved in these processes.

Recognizing that remediation plans tend to focus on the physical and economic aspects of containing pollution, this projects asks:

- What are the wider social costs and benefits of remediation?
- How can local historical and ecological knowledge be used to improve and manage remediation plans?
- How can the current approach to mine remediation be changed from a focus on site containment to a broader emphasis on community remediation?

Through these questions, this study explores issues of environmental justice for communities dealing with mine remediation using the case study of the Giant Mine in Yellowknife, NWT. This research will benefit local partner organizations and will contribute to a broader understanding of the social dimensions of mine remediation and the development of best practices for community engagement during mine closure.

**What you will do in this study:**

You are being asked to participate voluntarily as an interview participant as part of the research project outlined above.

**Length of time:**

The estimated time for interviews is about an hour. Interview times may vary between participants. Participants may choose to end the interview or withdraw their participation at any time.

**Withdrawal from the study:**

Participants may withdraw from the study before, after, or during the interview process without consequence. Participants have the right to ask that recorders be turned off during an interview and that sections or the entirety of a recording be deleted. Data will be altered or destroyed, or the conditions of its use altered (for instance, made anonymous) up to six months after the interview, according to the wishes expressed by the participant, regardless of previous representations of consent and with no consequences for the individual participant. Their withdrawal or participation is a confidential matter and will not be shared with other participants or organizations.

**Possible benefits:**

Participants will have the opportunity to share their experience, knowledge and understanding of contaminants and remediation related issues, and to share them with fellow community members and participants in other communities. It will also enhance the voice of northern communities in proposals for mitigation and remediation of contaminated sites.

Benefits to the scholarly community and society from the involvement of participants are significant. As noted above, indigenous engagements with industrial development and remediation are not well documented in many parts of northern Canada. This research will enable comparison with studies to be done by the researcher's supervisor and others in other northern indigenous communities affected by historical mineral development and remediation. The communities' stories will enhance scholarly and popular understandings of remediation in the region, contributing to policy debates and decision-making around the benefits and impacts of contemporary mining and mine closure in the region. In more general terms, the research will enhance scholarly understandings of mine remediation in Canada's North and the long-term historical legacies of extractive development in northern and remote regions.

**Possible risks:**

There are no foreseeable physical, emotional or financial risks for participants.

**Confidentiality:**

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use, or disclosure.

Because a fundamental goal of this research is to glean information from first-hand participants or individuals with first-hand knowledge and personal experiences of the remediation process, in some cases we will be seeking informed consent to use the names of the interviewees in published research material (for instance, from research scientists or key informants in communities).

If consent to use the interviewees names cannot be obtained or is not appropriate, we will refer to participants using generic terms or using a pseudonym. In all cases, research papers or book chapters will be sent to interviewees and/or relevant cultural authorities for comment prior to submission for publication. In community workshops where oral history or other local material is presented and discussed, the same conditions on personal and private information will apply.

Data confidentiality will be protected during the conduct of the research through limited distribution and reproduction of the interviews. The student researcher will be responsible for storing the interviews and producing the transcripts. The student's supervisors will have access to this data, but it will not be made available to other research partners. No further use or distribution of these interviews or transcripts is contemplated without obtaining further written consent from individual participants themselves. Interviewees will be provided with a final approved version of their interview transcript for their personal records.

**Anonymity:**

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Our purpose is not to collect private information on the interviewees. While a small number of questions may address personal involvement or knowledge (i.e., what is your involvement in the mine remediation?), in all cases the emphasis will be on the issue of the mine remediation and not the personal and private life of the interviewee.

If anonymity is desired every reasonable effort will be made to ensure the participants anonymity; and they will not be identified in publications without their explicit permission.

The research sites are small communities with a limited number of people who may have extensive knowledge of the remediation processes, making it easier to identify interviewees despite anonymity in published documents. When observing and participating in community consultations, meetings, and workshops etc., ensuring the anonymity of participants may be impossible to achieve do to the specialized nature of these meetings. Individuals involved in these meetings will be aware of the student's research intentions.

**Recording of Data:**

Interviews will be recorded using an audio recorder unless otherwise indicated by the participant.

**Storage of Data:**

The primary researcher and her supervisors will securely store interviews and transcripts on password-protected and encrypted computers for the duration of the project. Only the researcher and her supervisors will have access to the data on these computers. Thereafter, these products will be stored in a locked and secure

office for a minimum of five years, as required by Memorial University's policy on Integrity in Scholarly Research.

**Reporting of Results:**

The information collected during the interview will be used for the above project only. These uses will include a written thesis, academic publications, conferences and communication of the results to the communities and organizations involved. The thesis will be publically available at the QEII library. The information will be reported using direct quotations or personally identifying information only if participants consent, otherwise information will be reported only in a summarized form.

**Sharing of Results with Participants:**

Copies of recordings and transcripts will be sent to participants. Individual participants and community/regional authorities will be provided notice and copies of publications (where relevant) and will be provided with a copy of the thesis that will be a result of this project. Results will also be communicated through presentations, posters, and reports targeted to community members and regional government authorities. Results will also be shared via a "Northern Exposures" website to be created in the near future.

**Questions:**

You are welcome to ask questions at any time before, during, or after your participation in this research. If you would like more information about this study, please contact:

- Caitlynn Beckett, Master's Candidate, Memorial University, 9 Spencer Street St. John's, Newfoundland, A1C 4H1, [clb268@mun.ca](mailto:clb268@mun.ca), (306) 491-2672.
- Dr. Arn Keeling, Memorial University, [akeeling@mun.ca](mailto:akeeling@mun.ca), (709) 864-8990
- Dr. John Sandlos, Memorial University, [jsandlos@mun.ca](mailto:jsandlos@mun.ca), (709) 864-2429.

*The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at [icehr@mun.ca](mailto:icehr@mun.ca) or by telephone at 709-864-2861.*

**Consent:**

Your signature on this form means that:

- You have read the information about the research.

- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that if you choose to end participation **during** data collection, any data collected from you up to that point will be retained by the researcher, unless you indicate otherwise.
- You understand that if you choose to withdraw **after** data collection has ended, your data can be removed from the study up to 6 months after the interview.

I agree to be audio-recorded

☐ Yes ☐ No

I agree to the use of direct quotations

☐ Yes ☐ No

I allow my name to be identified in any publications  
resulting from this study

☐ Yes ☐ No

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

**Your signature confirms:**

☐ I have read what this study is about and understood the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

☐ I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.

☐ A copy of this Informed Consent Form has been given to me for my records.

\_\_\_\_\_  
Signature of participant

\_\_\_\_\_  
Date

**Researcher's Signature:**

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

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Signature of Principal Investigator

---

Date



## Appendix III: Sample Interview Questions

### **Introduction and Context**

1. Begin with introducing ourselves (both the interviewer and interviewee). What do you do in your community? What organization or group do you work for/represent and what is your position within this group? What are the responsibilities that go along with this position?
2. How have you and/or the organization you represent been involved in the remediation process?

### **Community Engagement in the Remediation Process – general questions for community leaders**

3. What do you know about the remediation process and how it has unfolded in your community?
4. Who/what are the major organizations, groups, companies or individuals defining the remediation planning? Do you think these different groups approach the process differently, how/why?
5. What do you think are the defining environmental, social and/or scientific characteristics of the Giant Mine remediation in Yellowknife? In your opinion, what is the scale of the Mine's impact (what areas has it affected most, how far do these affects reach, what are the affects beyond the physical ones etc.?)
6. What do you think the goals of remediation are or should be?
7. How has the community been involved in the remediation? How has the community been involved in follow-ups and consultations? Have there been any economic and/or employment opportunities for the community?
8. What are the positives and/or negatives of remediation?
9. Do you think the remediation process in Yellowknife has been successful? Why or why not?
10. What has gone well, what hasn't, what has been improved and what could be improved?
11. Do you think the Environmental Agreement has changed the remediation process at all? If so, how? How was the Environmental Agreement brought about – what was the inspiration for such an agreement and what were the goals of the stakeholders?

12. What is the merit of the Environmental Assessment process? What could be improved or changed?
13. Going forward, what do you hope to see happen at the Giant Mine? How do you envision the space in the future?
14. How do you think the community could communicate with future generations about the legacies of the Giant Mine?
15. Do you see the remediation process at Giant Mine as something that can help to build trust and reconciliation – reconstruction of relationships between the government, the First Nations and the community?

**Government Involvement in the Remediation Process – questions for government representatives and consulting companies.**

\*Questions from both sections could potentially be asked to participants from different groups, depending on their role

16. What is the government's role in the remediation process (municipally, territorially, and/or federally)? What are the policies/legislation directing these roles? Do you think the policy/legislation for remediation is lacking in any way, why or why not?
17. How has the government worked with local community organizations to plan for remediation?
18. What would you consider successes or failures of remediation in the specific case of the Giant Mine?
19. How does remediation planning differ in Northern Canada from other jurisdictions across Canada and/or internationally?
20. What is (or what should be) the role of industry in the remediation process?
21. What is the role of consulting companies in mine remediation, both generally and specifically for the Giant Mine case?
22. How does the government work with consulting companies in remediation processes?
23. What do you think is the appropriate role for local communities to play in remediation planning?

24. How are final decisions about remediation planning actually made?
25. How will this site be regulated in the future? How is planning for future monitoring and maintenance included in remediation planning? Who will be responsible for the site in the distant future? Are there any plans for training and monitoring programs?
26. How was the decision to use the frozen block method reached? What community consultation done prior to the Environmental Assessment?
27. What has been, or can be, done on the site without a water license?
28. Has the government used its emergency powers under s. 119 of the Mackenzie Valley Resource Management Act to push through remediation plans?
29. Can I get any more details regarding the FOS process (2011) – Has any of the data been published? The website says a plan language report of these findings will be produced – timeline?
30. At what point are the Health Effects Monitoring Program and the Health Assessment? How do these play into the present remediation planning?
31. The Environmental Agreement states that the Co-Proponents have to produce a perpetual care plan within 5 years of the signing on the agreement? How has planning for perpetual care been addressed so far and what are the plans for the upcoming years?
32. How will the ‘end’ of remediation be determined? The Environmental Agreement states many stipulations that the Co-proponents must produce yearly reports etc. How long will this last? Is there a date where this will no longer happen?
33. How does the Federal Contaminated Sites Action Plan account for perpetual care and maintenance of remediated contaminated sites? How does it plan for “forever”?
34. Where is the project at in regards to the Measures for the Environmental Assessment and Agreement? Are deadlines being met? How is it being funded at the moment?
35. How far back does remediation planning go? (What were previous closure plans and how could I get access to them?) Might be a good question to ask Kevin
36. How has the government’s approach to remediation changed throughout the last 10-15 years?

Environmental Assessment Specific:

37. How was this environmental assessment similar or different from other environmental assessments in the NWT?

**City of Yellowknife**

38. In letters from the City to the Review Board, there is mention of the creation of a land use plan. However, there was no commitment to include this land use plan in the Remediation Plan? Why or why not? Do you think a land use plan is an important part of the remediation process (in order to plan for future land uses, or to 'block' land use in the future)?
39. City water comes from Yellowknife Bay, which there has been public concern about. Has any commitment been made to reroute this water supply, or to carry out testing on the water? A letter from the City to the Review Board in 2012 mentions this.
40. Newspaper Article from the Northern New Service states that the city was denied pipeline help (Mar 2, 2012) "The replacement of the water line is not part of the proposed project." (in reference to the environmental assessment) Vern Christensen (Executive Director MVEIRB)
41. Newspaper Article from CBC (2008) mentioned that Mayor Gordon Van Tighem said he thinks the City should be compensated for land at the site that will not be cleaned up. Does the city still take this stance? Why or why not?
42. What would the City like to see for future land use? How will this be decided? How have future land use considerations been incorporated into remediation planning?

**General Questions**

43. How does what has happened at Giant Mine compare with Con Mine?
44. There seemed to be a major concern about the Federal government acting as the proponent, the regulator and the inspector. Do you think the signing of the Environmental Agreement and the establishment of the Oversight Committee has dealt with this problem? Why or why not?

**YKDFN**

- 45. How do land claims come into play in the Giant Mine Remediation Project?
- 46. How does YKDFN envision the site being remediated and used in the future?  
Technically the City of Yellowknife and the GNWT will decide future land uses, how, if at all, will YKDFN be involved in deciding future land uses?

### **Concluding Questions**

- 47. Do you know of anyone else who would be a good candidate to interview in regard to this subject? Could you provide me with their contact information?
- 48. Any additional documents/literature that you think may be helpful?
- 49. Any questions for me about the interview process and research project?
- 50. Do you have an address I can send the transcripts of this interview or would you prefer it sent via email?